SERVICE MANUAL

Castle®

5540
5545
5550
WARMING CABINETS

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MDT

Technology for Life

SERVICE MANUAL 350265 (6/4/90)

Related Publications:

Installation Instructions	350263
Operator Manual	350264
Parts Catalog	350266

IMPORTANT

Special safety signs and instructions are used in this manual. Read them carefully before using the warming cabinet. It is the responsibility of the user to follow all recommendations.

DESCRIPTION OF SYMBOLS & NOTES IN MANUAL

The following symbols are related notes that appear in this manual.

DANGER *"Danger" notes alert the user to the possibility of serious personal injury which could be fatal.*

WARNING *"Warning" notes alert the user to the possibility of personal injury.*

CAUTION *"Caution" notes alert the user to the possibility of damage to the equipment.*

NOTE ▶ *"Notes" alert the user to pertinent facts and conditions.*

NOTE ▶ *All parts replaced under warranty shall be returned intact to MDT Corporation for evaluation.*

NOTE ▶ *This manual contains proprietary information of MDT Corporation. It shall not be reproduced in whole or in part without the written permission of MDT.*

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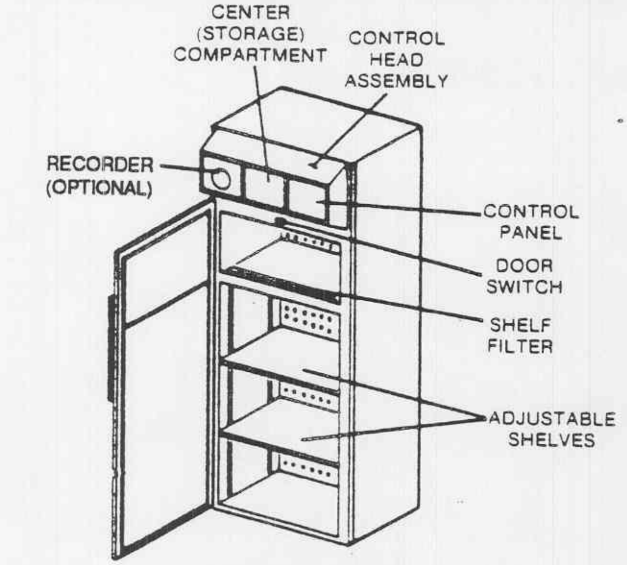
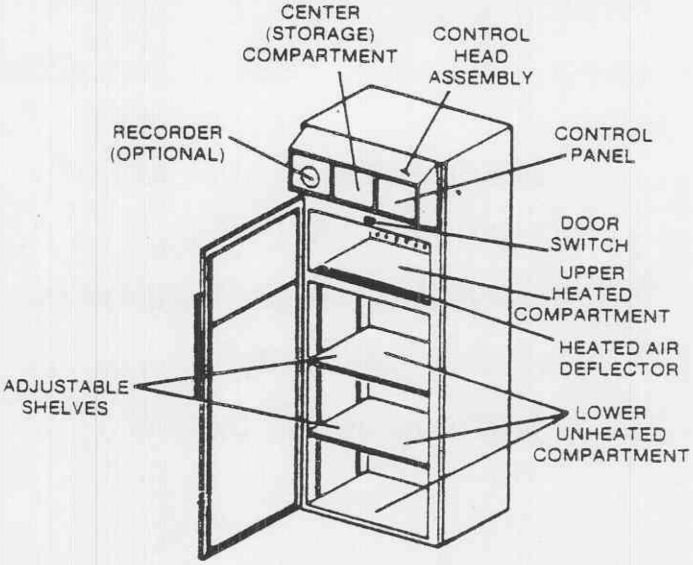
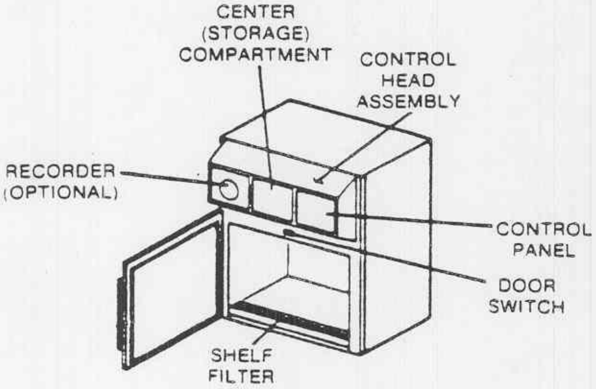

CENTER (STORAGE) COMPARTMENT
CONTROL HEAD ASSEMBLY
RECORDER (OPTIONAL)
CONTROL PANEL
DOOR SWITCH
SHELF FILTER
ADJUSTABLE SHELVES

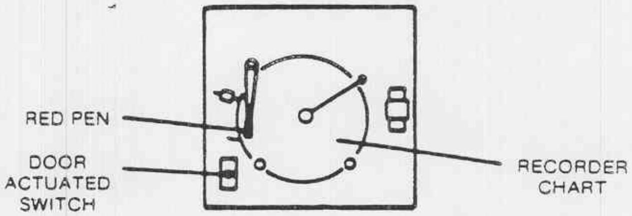
MODEL 5550
(Cabinet Model)


CENTER (STORAGE) COMPARTMENT
CONTROL HEAD ASSEMBLY
RECORDER (OPTIONAL)
CONTROL PANEL
DOOR SWITCH
UPPER HEATED COMPARTMENT
HEATED AIR DEFLECTOR
ADJUSTABLE SHELVES
LOWER UNHEATED COMPARTMENT

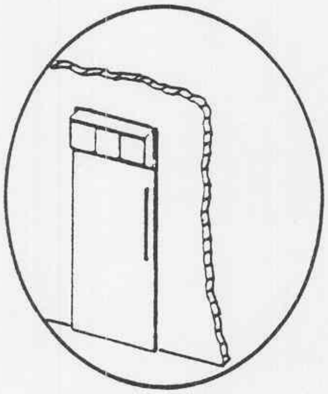
MODEL 5545
(Cabinet Model)


CENTER (STORAGE) COMPARTMENT
CONTROL HEAD ASSEMBLY
RECORDER (OPTIONAL)
CONTROL PANEL
DOOR SWITCH
SHELF FILTER

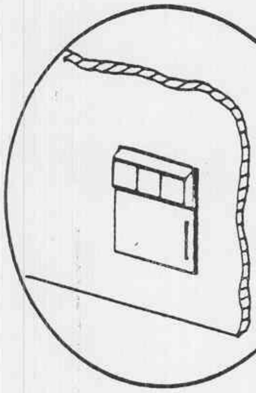
MODEL 5540
(Cabinet Model)


RED PEN
DOOR ACTUATED SWITCH
RECORDER CHART

OPTIONAL RECORDER



MODEL 5545 & 5550
(Recessed Model)



MODEL 5540
(Recessed Model)

MDT/CASTLE 5540, 5545, and 5550 WARMING CABINETS

GENERAL DESCRIPTION

Castle 5540, 5545, and 5550 Warming Cabinets are designed for the heating and storage of solutions, blankets, towels, and other dry goods. Cabinet temperature is adjustable from 36°C (97°F) to 71°C (160°F).

The compact **5540** Warming Cabinet provides one compartment capable of holding 20 two-liter flasks. Its filter, located in the front of the compartment, filters the heated air and directs it upward.

The **5545** Warming Cabinet has an upper heated compartment and a lower unheated compartment with two adjustable shelves. Air from the upper compartment does not circulate into the lower compartment, so the lower compartment remains at ambient temperature regardless of the upper compartment's temperature.

The **5550** Warming Cabinet circulates heated air evenly over items placed on each of its four shelves. Each shelf is capable of holding 20 two-liter flasks. The two shelves provided are adjustable, thus allowing the height of the lower three compartments to be adjustable. The filter, provided in the top shelf, filters the heated air from the lower shelves and directs it upward.

DESCRIPTION OF COMPONENTS

Door Switch

Closing the warming cabinet door depresses the door switch and allows electrical power to contact the heating circuit. Opening the door, releases the door switch and shuts off electrical power to the heating circuit and fan.

Filter

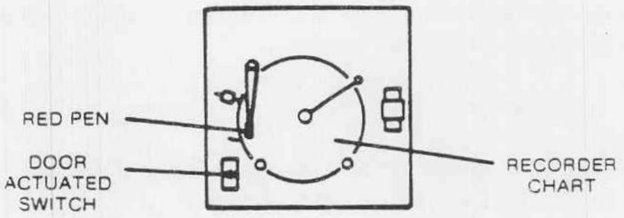
Keeps airborne dust and debris from circulating through the heated compartment, and directs the heated air upward.

Control Head Assembly
Center Storage Compartment

May be used for ready access of recorder charts, ink pens, cartridges, etc.

Optional Recorder

A warming cabinet may be equipped with an optional recorder to record the temperature of the cabinet over a 24 hour period.



OPTIONAL RECORDER

Recorder Chart - The recorder chart is graduated in single degree increments from 0 to 100°C (32 to 212°F) over a 24 hour period.

Door Actuated Switch - Closing the recorder door triggers this switch to start the recorder; opening the recorder door triggers this switch to stop the recorder. If you wish to record the cabinet temperature while the recorder door is open, simply pull the door actuator switch outward.

NOTE ▶ *When you open the recorder door, the pen arm automatically lifts off the chart and moves to the holding ramp where it will remain until you close the recorder door.*

Adjustable Shelves (Models 5545 and 5550 Only)

To increase or decrease the height of the three compartments, you may raise, lower, or remove the two adjustable shelves.

Main Power Switch/Circuit Breaker

Turning off the main power switch/circuit breaker, located under the control head, removes all electrical power from the control circuit. Power is still present up to the circuit breaker output.

Transformer

The transformer steps down the electrical power input to provide 24V for the chart recorder.

Overtemperature Switch

This switch closes at 212°F to remove electrical power from the heaters. The overtemperature switch resets at 192°F.

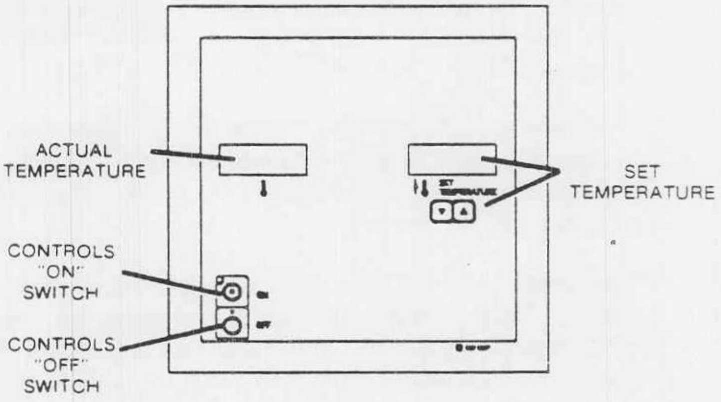
Heaters

The warming cabinet uses two 500W cone-type heaters. These heaters screw into the two middle electrical sockets inside the control box.

Fans

Two fans circulate the heated air as illustrated in "Heated Air Flow."

TOUCH CONTROL PANEL



CONTROL PANEL

Power ON - Pressing this button turns on the warming cabinet, and activates the control panel.

LED Indicator - Pressing the **ON** button illuminates the green "ON" LED.

Power OFF - Pressing this button turns off the warming cabinet, de-activates the control panel, and allows the cabinet to return to ambient temperature.

Set-Temp. Up and Down Arrow Buttons - Pressing these buttons allows you to increase or decrease the cabinet temperature in 1°C (1 or 2°F) increments. Set-temperatures range from 36°C (97°F) to 71°C (160°F).

Actual Temperature Display - While the control panel is activated, the left-hand temperature display continuously indicates the actual temperature inside the warming cabinet.

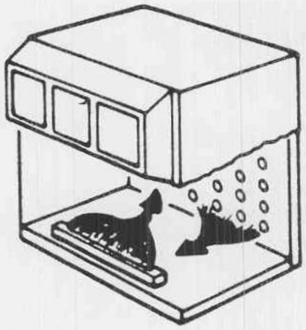
Set-Point Temperature Display - While the control panel is activated the right-hand temperature display continuously indicates the temperature you selected for the warming cabinet to maintain.

Condition Indicator - "OH" appears in the actual temperature selected display if the temperature of the warming cabinet rises above the set temperature by more than 4°C (7°F), thus alerting you to an overheat condition.

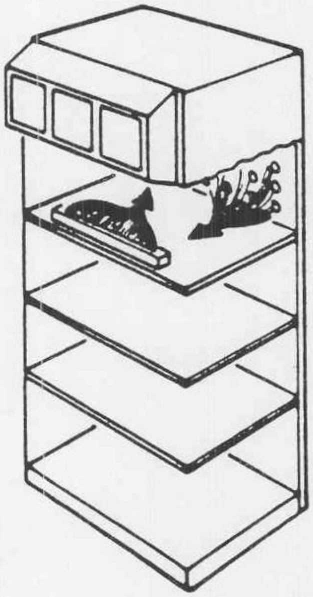
TEMPERATURE CONVERSION CHART

°C	°F	°C	°F	°C	°F
36	97	48	118	60	140
37	99	49	120	61	142
38	100	50	122	62	144
39	102	51	124	63	145
40	104	52	126	64	147
41	106	53	127	65	149
42	108	54	130	66	151
43	109	55	131	67	153
44	111	56	133	68	154
45	113	57	135	69	156
46	115	58	136	70	158
47	117	59	138	71	160

HEATED AIR FLOW

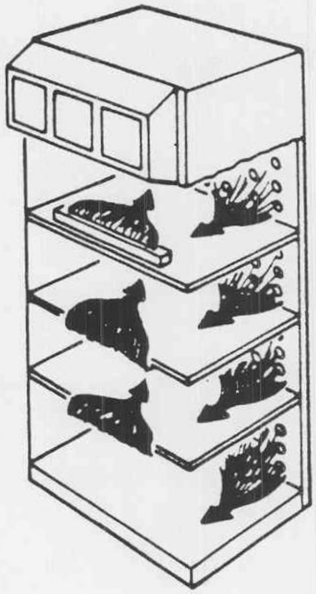


MODEL 5540



MODEL 5545

- Upper Heated Compartment
- Lower Unheated Compartment



MODEL 5550

CONTROL BOARD DETAIL

To access the control board, proceed as follows:

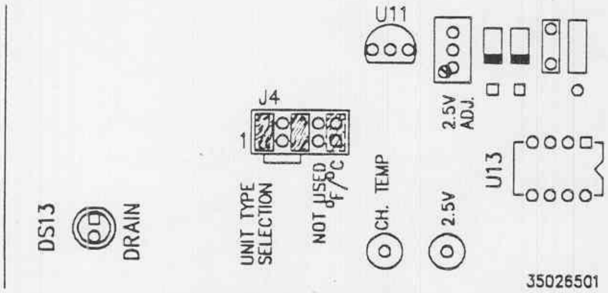
1. Open center section door.
2. Turn screw in lower right corner to release the control head.
3. Raise the control head and secure it in the raised position.
4. Turn OFF circuit breaker.

1. Unit Type Configuration

WARNING *To avoid possible electrical shock, power down the main circuit breaker before making jumper selections.*

NOTE *The main circuit breaker must be powered down before making jumper selections to reset the system with the new values.*

For unit type and °F/°C selection, configure J4 jumpers as shown below:



JUMPER CONFIGURATION

In order to operate the warming cabinet, the unit type jumpers should be installed in the first and third positions.

For °F operation of the warming cabinet, install the jumper in the °F/°C location.

For °C operation of the warming cabinet, do not install the jumper.

2. Volume Control

While depressing the controls "ON" button on the control panel, adjust the volume by rotating the volume control wheel R28 until you obtain the desired volume level.

3. Service Diagnostic Indicator LED's

Four indicator LED's on the control board serve as aids in troubleshooting.

DS14 (POWER) — when lit, indicates that +5VDC is being supplied to the control board.

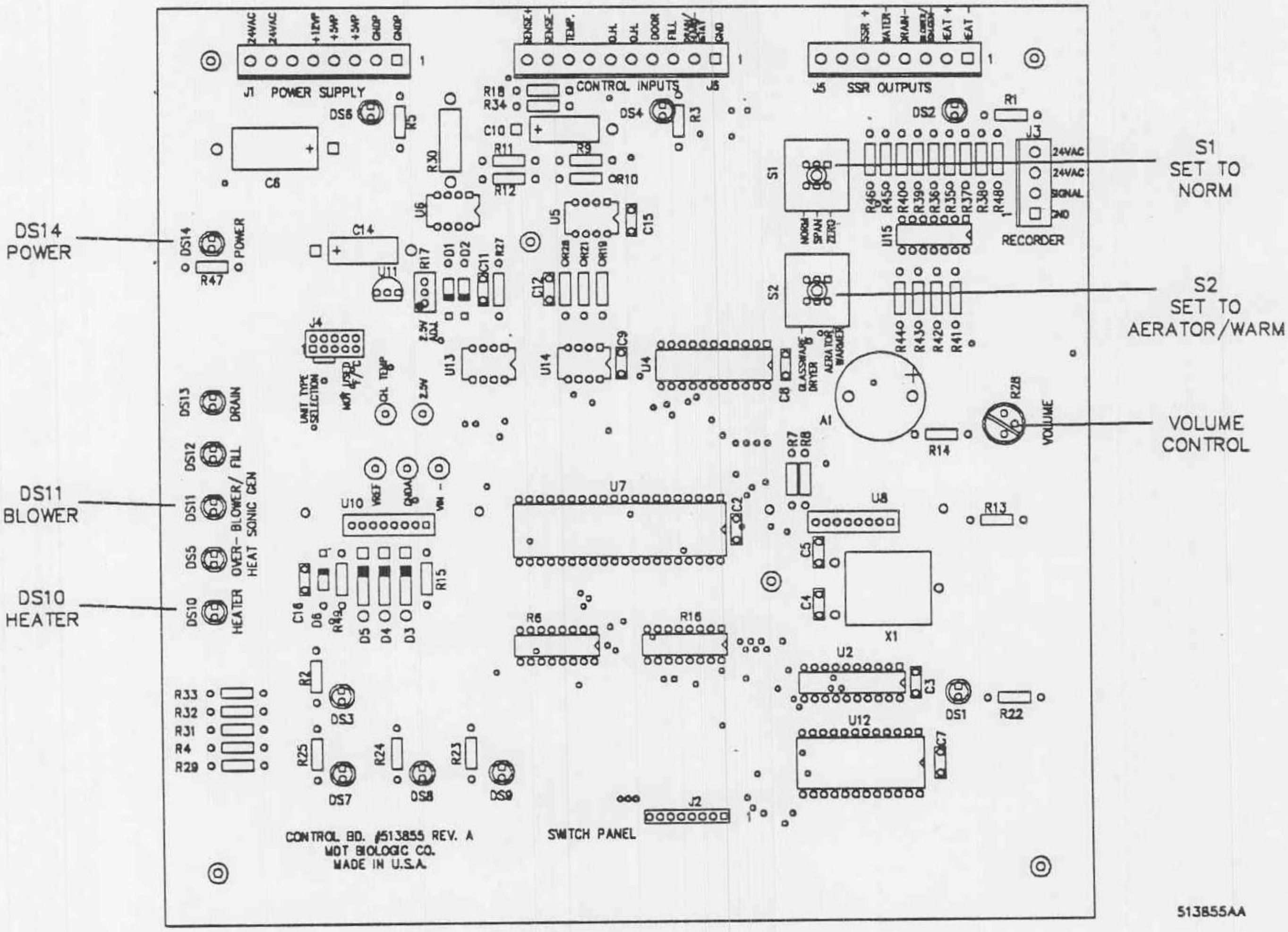
DS11 (BLOWER) — when lit, indicates that 2SSR is turned ON, which turns ON the fans.

DS10 (HEATER) — when lit, indicates that 1SSR is being turned ON, which turns ON the heaters.

DS5, DS12 and DS13 do not apply to the warming cabinet.

4. Toggle Switches S1 and S2

These toggle switches are used in conjunction with an optional chart recorder. If the unit is equipped with a chart recorder, switch S2 should be set to the Aerator/Warmer position and switch S1 should be set to the Normal (NORM) position.


J1 POWER SUPPLY
CONTROL INPUTS
J6
J5 SSR OUTPUTS
J3 RECORDER
S1
SET TO NORM
S2
SET TO AERATOR/WARM
DS14 POWER
DS13 DRAIN
DS12 FILL
DS11 BLOWER
DS5 OVER-BLOWER/ HEAT SONIC GEN
DS10 HEATER
R28 VOLUME
VOLUME CONTROL
A1
U7
X1
J2 SWITCH PANEL
CONTROL BD. #513855 REV. A
MDT BIOLOGIC CO.
MADE IN U.S.A.
513855AA

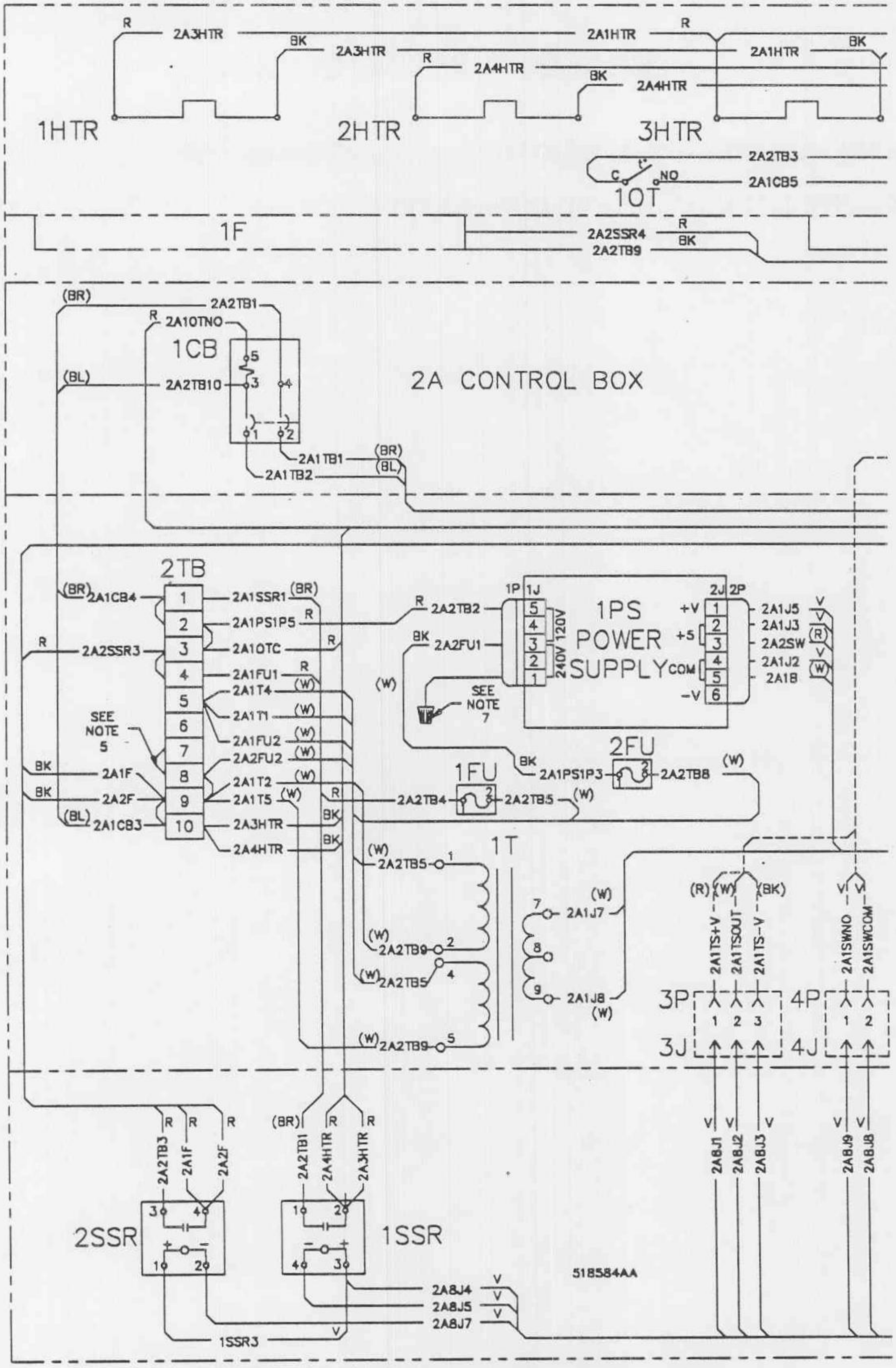
BOARD ADJUSTMENTS, INDICATORS, AND SETTINGS

NOTES

SECTION 2. WIRING DIAGRAMS

5540/5545/5550 WARMING CABINET WIRING DIAGRAM 2-2

PRINTED CIRCUIT BOARD SCHEMATIC DIAGRAM 2-6


1HTR
2HTR
3HTR
2A3HTR
2A1HTR
2A4HTR
R
BK
2A2TB3
2A1CB5
C
NO
1OT
1F
2A2SSR4
2A2TB9
2A CONTROL BOX
1CB
2A2TB1
2A1OTNO
2A2TB10
2A1TB1
2A1TB2
(BR)
(BL)
2TB
2A1CB4
2A2SSR3
2A1F
2A2F
2A1CB3
2A1SSR1
2A1PS1P5
2A1OTC
2A1FU1
2A1T4
2A1T1
2A1FU2
2A2FU2
2A1T2
2A1T5
2A3HTR
2A4HTR
SEE NOTE 5
(W)
1PS
POWER
SUPPLY
1P 1J
2J 2P
240V 120V
+V
+5
COM
-V
2A2TB2
2A2FU1
SEE NOTE 7
2A1J5
2A1J3
2A2SW
2A1J2
2A1B
V
(R)
(W)
(BK)
1FU
2FU
2A2TB4
2A2TB5
2A1PS1P3
2A2TB8
1T
2A2TB5
2A2TB9
2A1J7
2A1J8
3P
3J
4P
4J
2A1TS+V
2A1TSOUT
2A1TS-V
2A1SWNO
2A1SWCOM
2A8J1
2A8J2
2A8J3
2A8J9
2A8J8
2SSR
1SSR
2A2TB3
2A1F
2A2F
2A2TB1
2A4HTR
2A3HTR
2A8J4
2A8J5
2A8J7
1SSR3
518584AA

5540/5545/5550 WARMING CABINET WIRING DIAGRAM

NOTES:

1) ALPHA NUMBERS SHOWN ON WIRE LEADS PART OF HOT STAMPING

2) BRACKETS () INDICATE ACTUAL WIRE COLOR, NOT INFORMATION TO BE STAMPED ON WIRE. THESE WIRES ARE NOT STAMPED

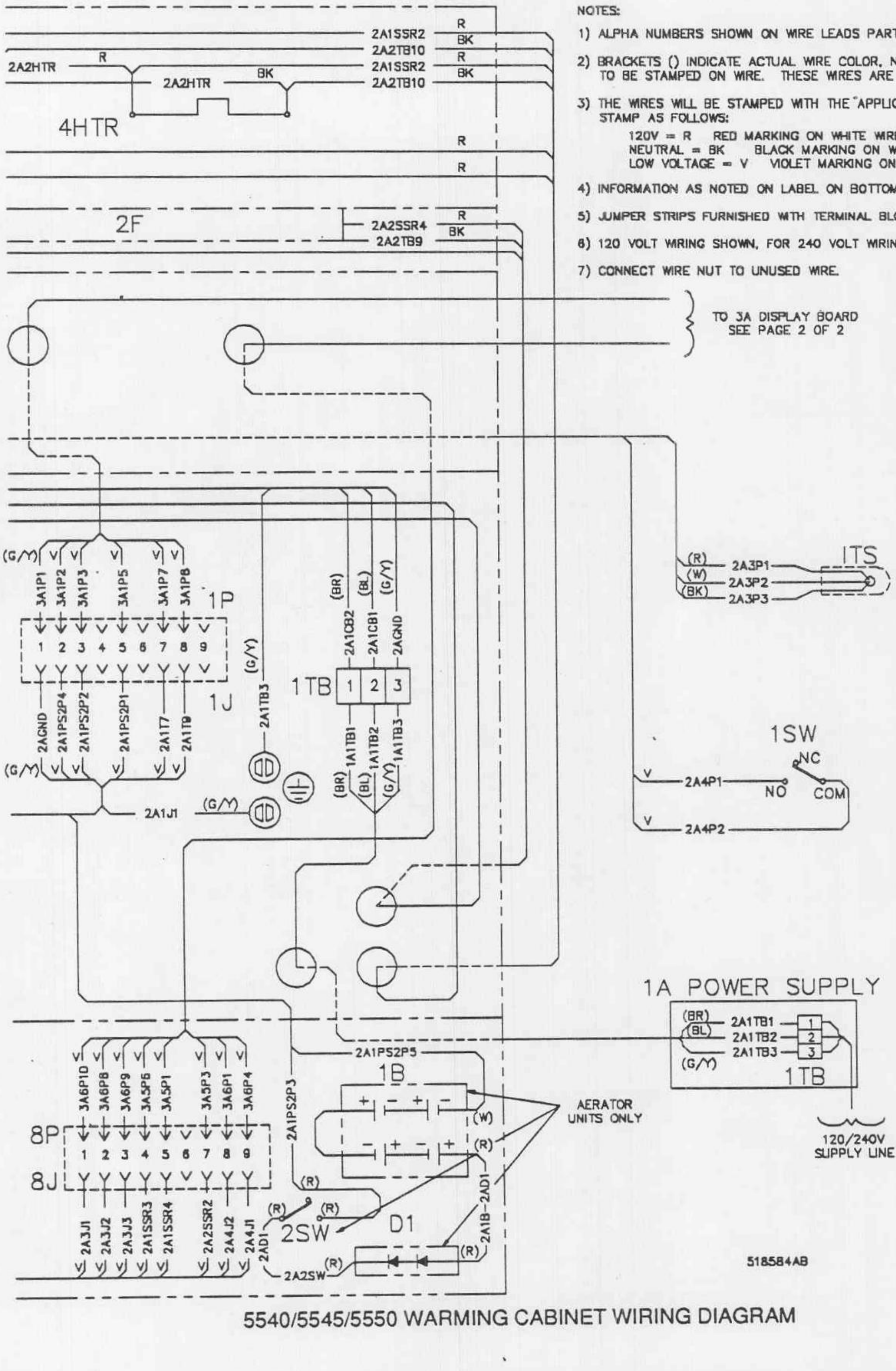
3) THE WIRES WILL BE STAMPED WITH THE APPLICABLE COLORED STAMP AS FOLLOWS:
120V = R RED MARKING ON WHITE WIRE
NEUTRAL = BK BLACK MARKING ON WHITE WIRE
LOW VOLTAGE = V VIOLET MARKING ON WHITE WIRE

4) INFORMATION AS NOTED ON LABEL ON BOTTOM SIDE OF 1TB.

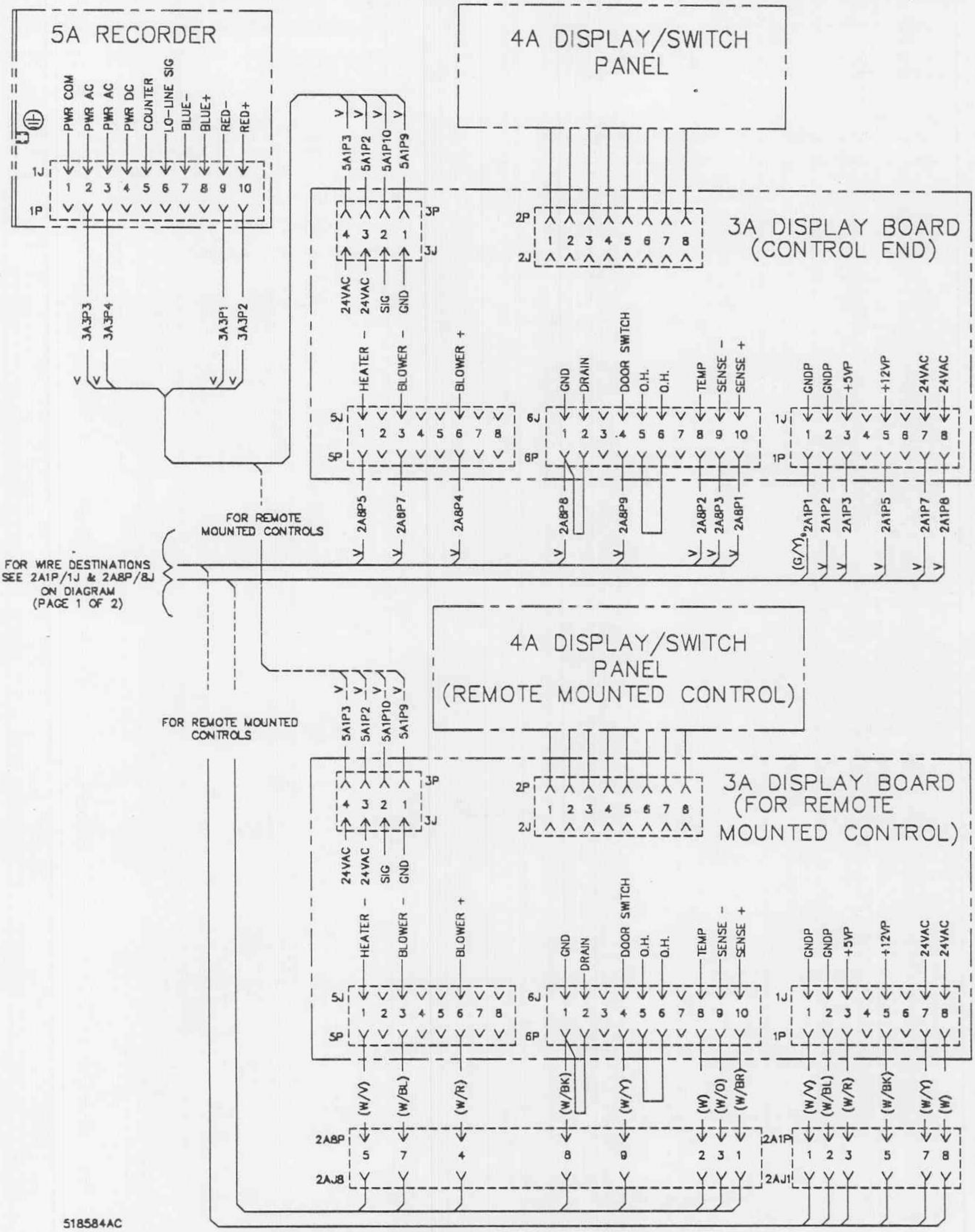
5) JUMPER STRIPS FURNISHED WITH TERMINAL BLOCK.

6) 120 VOLT WIRING SHOWN, FOR 240 VOLT WIRING SEE DETAIL: A

7) CONNECT WIRE NUT TO UNUSED WIRE.

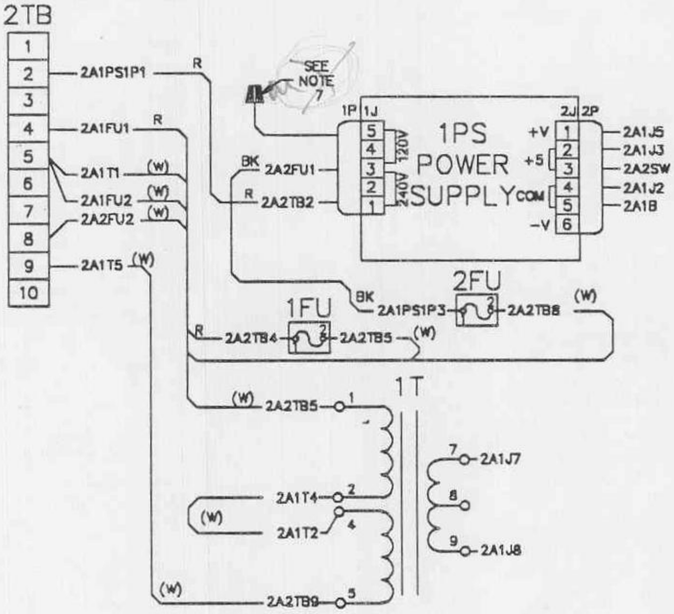

2A1SSR2
2A2TB10
2A2HTR
2A2HTR
4HTR
2F
2A2SSR4
2A2TB9
R
BK
TO 3A DISPLAY BOARD SEE PAGE 2 OF 2
ITS
(R) 2A3P1
(W) 2A3P2
(BK) 2A3P3
1P
1J
3A1P1
3A1P2
3A1P3
3A1P5
3A1P7
3A1P8
2AGND
2A1PS2P4
2A1PS2P2
2A1PS2P1
2A1T7
2A1T8
(G/Y)
2A1J1
2A1TB3
1TB
2A1CB2
2A1CB1
2AGND
1A1TB1
1A1TB2
1A1TB3
(BR)
(BL)
1SW
NC
NO
COM
2A4P1
2A4P2
1A POWER SUPPLY
2A1TB1
2A1TB2
2A1TB3
1TB
120/240V SUPPLY LINE
2A1PS2P5
2A1PS2P3
1B
AERATOR UNITS ONLY
(W)
(R)
8P
8J
3A6P10
3A6P8
3A6P9
3A5P6
3A5P1
3A5P3
3A6P1
3A6P4
2A3J1
2A3J2
2A3J3
2A1SSR3
2A1SSR4
2A2SSR2
2A4J2
2A4J1
2AD1
2SW
D1
2A2SW
2A1B
2AD1
518584AB

5540/5545/5550 WARMING CABINET WIRING DIAGRAM


5A RECORDER
PWR COM
PWR AC
PWR AC
PWR DC
COUNTER
LO-LINE SIG
BLUE-
BLUE+
RED-
RED+
1J
1P
1 2 3 4 5 6 7 8 9 10
3A3P3
3A3P4
3A3P1
3A3P2
4A DISPLAY/SWITCH PANEL
5A1P3
5A1P2
5A1P10
5A1P9
3P
3J
4 3 2 1
24VAC
24VAC
SIG
GND
2P
2J
1 2 3 4 5 6 7 8
3A DISPLAY BOARD (CONTROL END)
HEATER -
BLOWER -
BLOWER +
5J
5P
1 2 3 4 5 6 7 8
GND
DRAIN
DOOR SWITCH
O.H.
O.H.
TEMP
SENSE -
SENSE +
6J
6P
1 2 3 4 5 6 7 8 9 10
GNDP
GNDP
+5VP
+12VP
24VAC
24VAC
1J
1P
1 2 3 4 5 6 7 8
2A8P5
2A8P7
2A8P4
2A8P8
2A8P9
2A8P2
2A8P3
2A8P1
(G/Y)
2A1P1
2A1P2
2A1P3
2A1P5
2A1P7
2A1P8
FOR REMOTE MOUNTED CONTROLS
FOR WIRE DESTINATIONS SEE 2A1P/1J & 2A8P/8J ON DIAGRAM (PAGE 1 OF 2)
4A DISPLAY/SWITCH PANEL (REMOTE MOUNTED CONTROL)
FOR REMOTE MOUNTED CONTROLS
3A DISPLAY BOARD (FOR REMOTE MOUNTED CONTROL)
(W/V)
(W/BL)
(W/R)
(W/BK)
(W/Y)
(W)
(W/O)
(W/BR)
(W/V)
(W/BL)
(W/R)
(W/BK)
(W/Y)
(W)
2A8P
2AJ8
5 7 4 8 9 2 3 1
2A1P
2AJ1
1 2 3 5 7 8
518584AC

5540/5545/5550 WARMING CABINET WIRING DIAGRAM

NOTE ▶ *Voltage at 1PS2J-1 is +12V, voltage at 1PS2J-6 is -12V.*

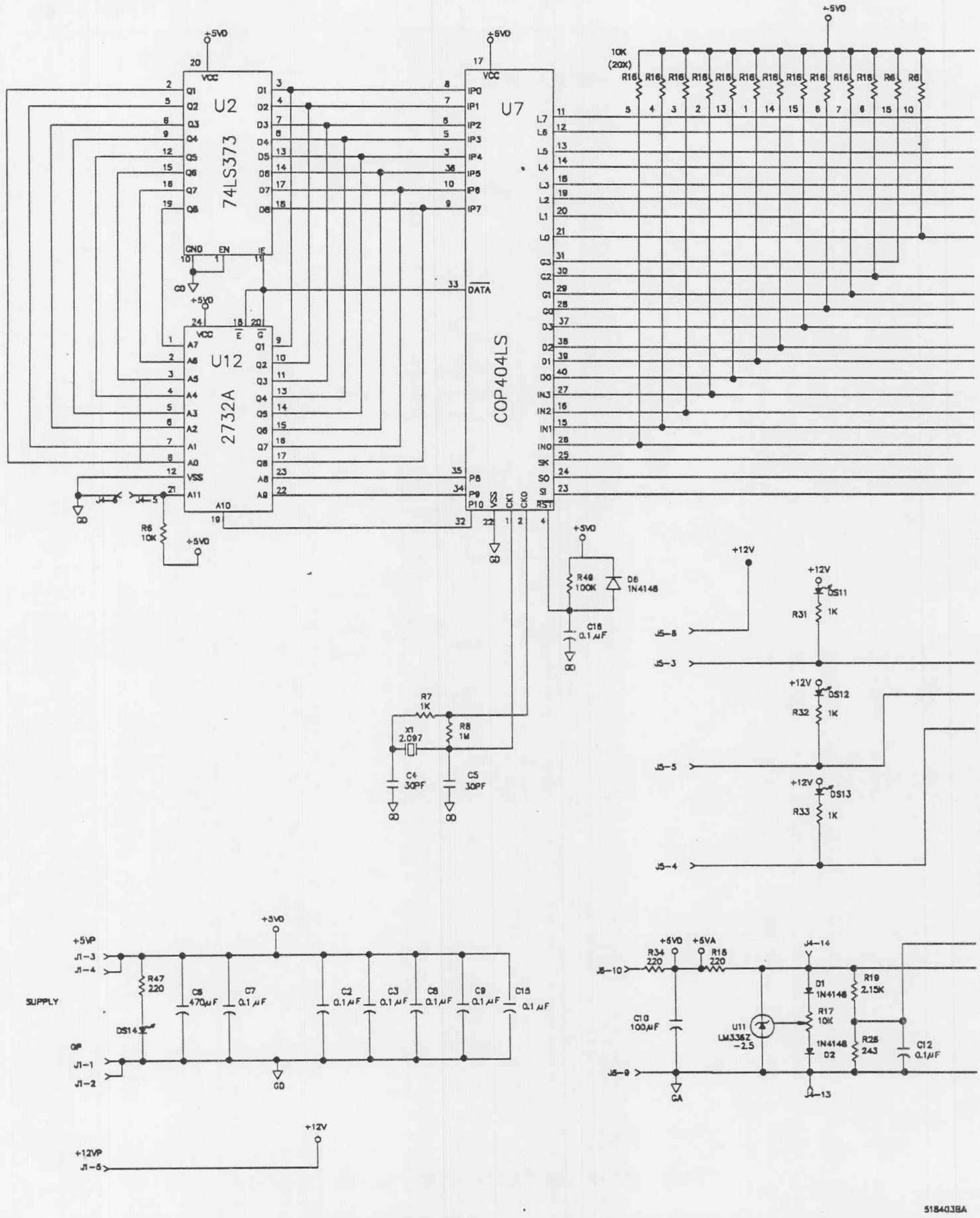

2TB
1
2
3
4
5
6
7
8
9
10
2A1PS1P1
R
2A1FU1
R
2A1T1
(W)
2A1FU2
(W)
2A2FU2
(W)
2A1T5
(W)
SEE NOTE 7
1P
1J
5
4
3
2
1
120V
240V
BK
2A2FU1
R
2A2TB2
1PS
POWER
SUPPLY
2J
2P
+V
+5
COM
-V
1
2
3
4
5
6
2A1J5
2A1J3
2A2SW
2A1J2
2A1B
2FU
BK
2A1PS1P3
2A2TB8
(W)
1FU
R
2A2TB4
2A2TB5
(W)
1T
(W)
2A2TB5
1
2A1T4
2
(W)
2A1T2
4
(W)
2A2TB9
5
7
2A1J7
8
9
2A1J8

~~DETAIL: A~~

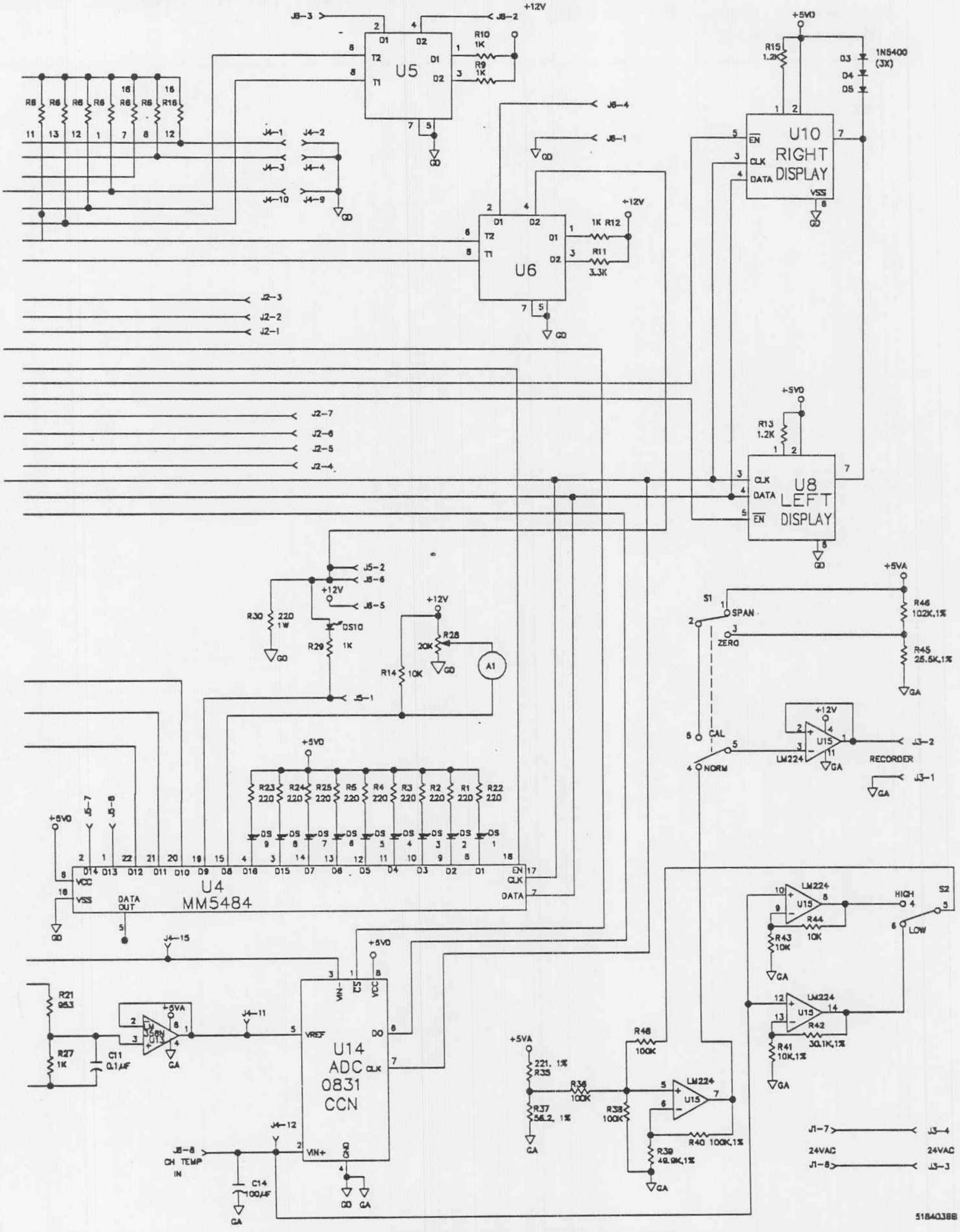
WIRING DIAGRAM FOR 240VAC

518584AD

5540/5545/5550 WARMING CABINET WIRING DIAGRAM


U2
74LS373
U12
2732A
U7
COP404LS
+5VD
VCC
GND
EN
IE
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
D1
D2
D3
D4
D5
D6
D7
D8
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
VSS
IP0
IP1
IP2
IP3
IP4
IP5
IP6
IP7
P8
P9
P10
DATA
L7
L6
L5
L4
L3
L2
L1
L0
G3
G2
G1
G0
D3
D2
D1
D0
IN3
IN2
IN1
IN0
SK
SO
SI
CK1
CK0
RST
GD
J4-6
J4-5
R6
10K
10K
(20X)
R16
R6
R49
100K
D8
1N4148
C16
0.1 µF
R7
1K
R8
1M
X1
2.097
C4
30PF
C5
30PF
+12V
DS11
R31
1K
DS12
R32
1K
DS13
R33
1K
J5-8
J5-3
J5-5
J5-4
+5VP
J1-3
J1-4
SUPPLY
R47
220
DS14
C6
470µF
C7
0.1 µF
C2
0.1 µF
C3
0.1 µF
C8
0.1 µF
C9
0.1 µF
C15
0.1 µF
GP
J1-1
J1-2
+12VP
J1-5
+5VA
R34
220
R18
220
J4-14
J5-10
C10
100µF
D1
1N4148
R17
10K
U11
LM336Z
-2.5
1N4148
D2
R19
2.15K
R26
243
C12
0.1µF
J5-9
GA
J4-13
518403BA

PRINTED CIRCUIT BOARD SCHEMATIC DIAGRAM


U5
U6
U10 RIGHT DISPLAY
U8 LEFT DISPLAY
U4 MM5484
U14 ADC 0831 CCN
U13 LM 358N
U15 LM224
R10 1K
R9 1K
R12 1K
R11 3.3K
R15 1.2K
R13 1.2K
D3 D4 D5 1N5400 (3X)
R30 220 1W
DS10
R29 1K
R28 20K
R14 10K
A1
R23 220
R24 220
R25 220
R5 220
R4 220
R3 220
R2 220
R1 220
R22 220
R46 102K,1%
R45 25.5K,1%
R44 10K
R43 10K
R42 30.1K,1%
R41 10K,1%
R48 100K
R35 221, 1%
R36 100K
R37 56.2, 1%
R38 100K
R40 100K,1%
R39 49.9K,1%
R21 953
R27 1K
C11 0.1µF
C14 100µF
S1 SPAN ZERO CAL NORM
S2 HIGH LOW
RECORDER
J3-2
J3-1
J1-7 J3-4 24VAC
J1-8 J3-3 24VAC
J6-8 CH TEMP IN
+12V
+5VD
+5VA
GD
GA
DATA OUT
51840388

PRINTED CIRCUIT BOARD SCHEMATIC DIAGRAM

NOTES

SECTION 3. TROUBLE ANALYSIS

DIAGNOSTIC FLOW CHARTS 3-2
    Unit Does Not Turn On 3-3
    Circuit Breaker Trips 3-4
    Unit Does Not Heat 3-5
    Unit Not At Proper Temperature 3-6
    +5V, +12V Power Supply Check 3-7
    "OH" Warning Indicated In Actual Temperature Display 3-8
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HEATER/FAN OPERATIONAL CHECKS 3-10

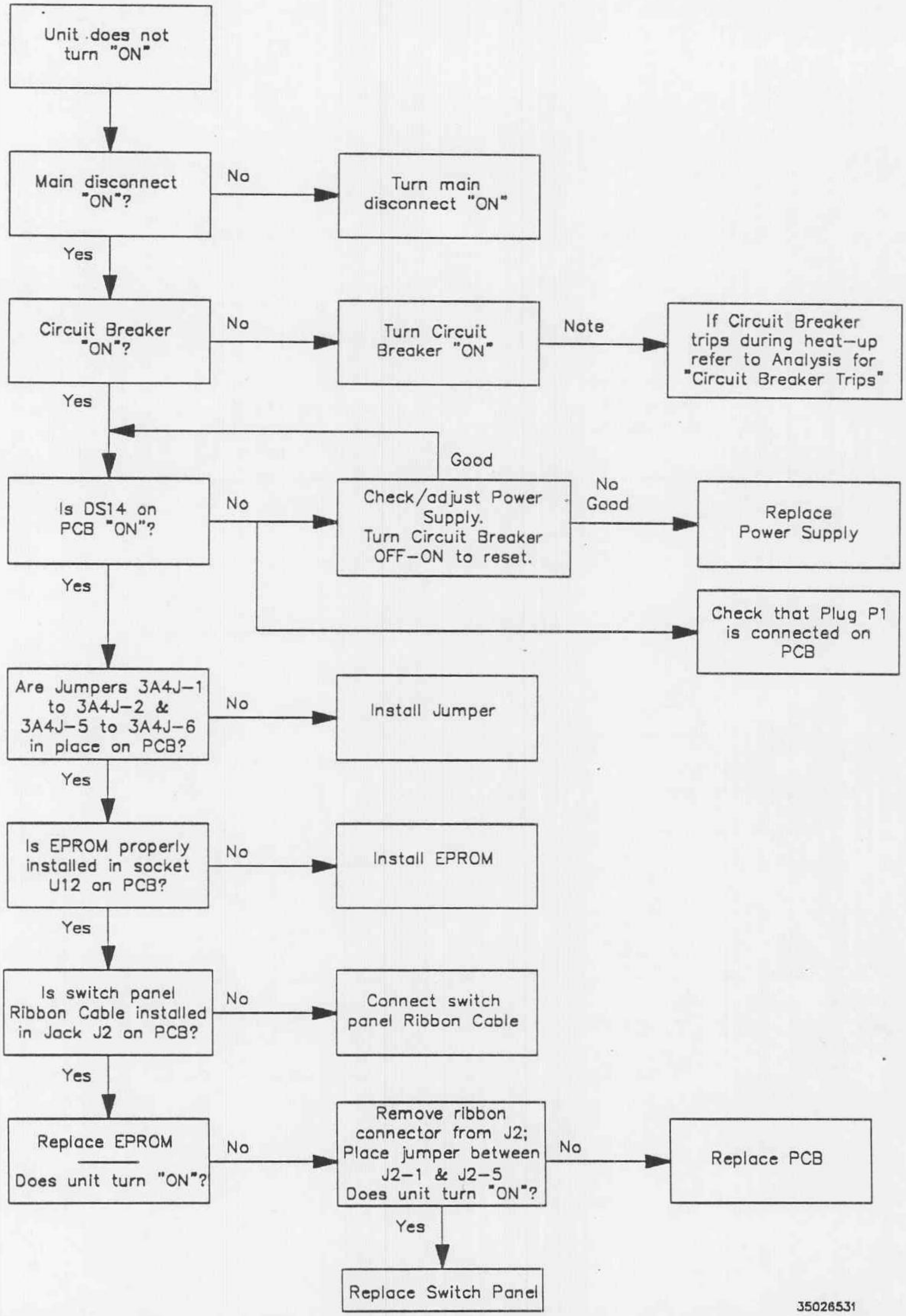
TROUBLE ANALYSIS

DIAGNOSTIC FLOW CHARTS

WARNING

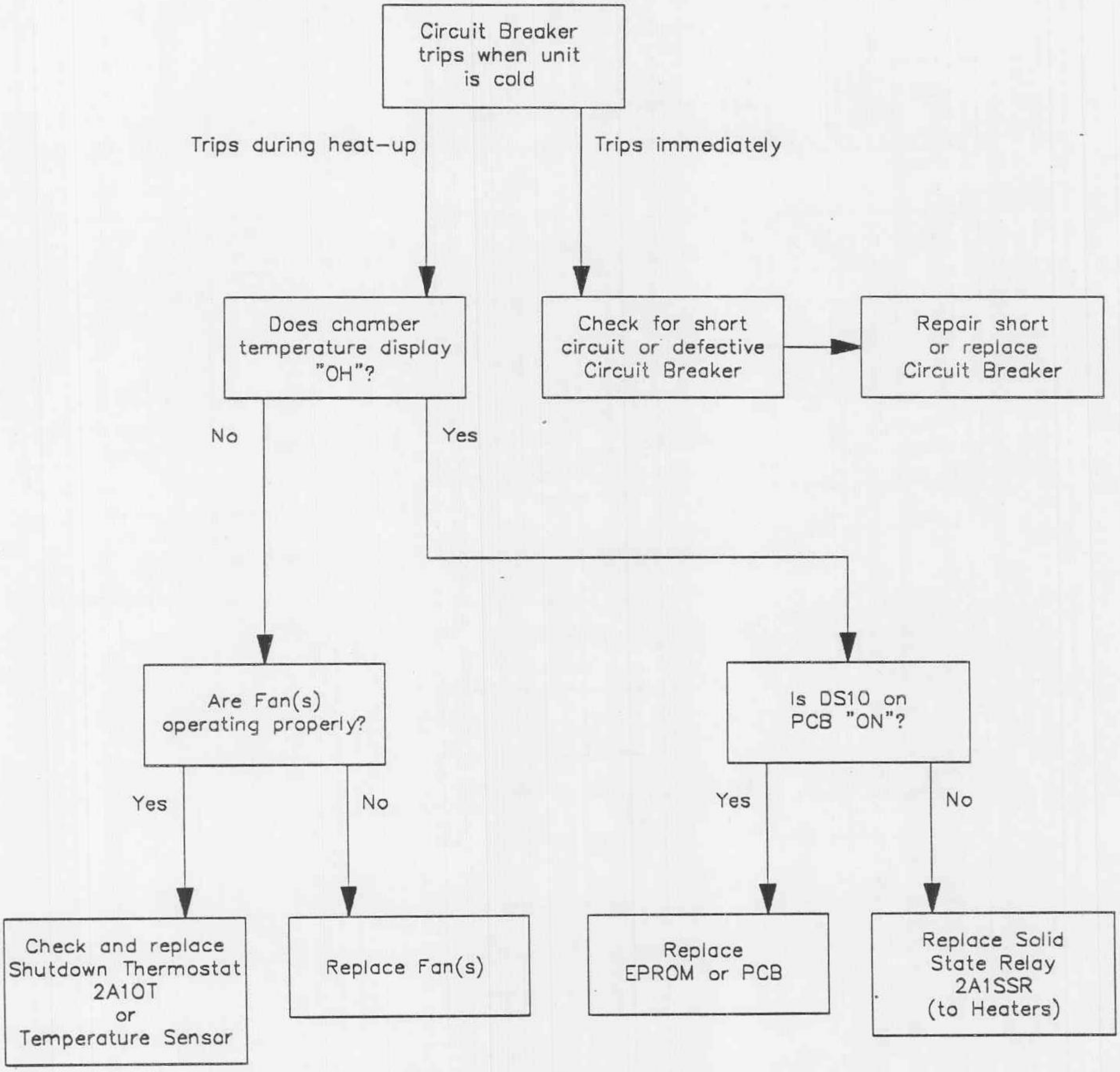
ELECTRICAL SHOCK HAZARD. Some of the trouble analysis requires access to control box components with the main power activated. This trouble analysis should be conducted by qualified personnel and with extreme caution.

UNIT DOES NOT TURN ON


Unit does not turn "ON"
Main disconnect "ON"?
No
Turn main disconnect "ON"
Yes
Circuit Breaker "ON"?
No
Turn Circuit Breaker "ON"
Note
If Circuit Breaker trips during heat-up refer to Analysis for "Circuit Breaker Trips"
Yes
Good
Is DS14 on PCB "ON"?
No
Check/adjust Power Supply. Turn Circuit Breaker OFF-ON to reset.
No Good
Replace Power Supply
Check that Plug P1 is connected on PCB
Yes
Are Jumpers 3A4J-1 to 3A4J-2 & 3A4J-5 to 3A4J-6 in place on PCB?
No
Install Jumper
Yes
Is EPROM properly installed in socket U12 on PCB?
No
Install EPROM
Yes
Is switch panel Ribbon Cable installed in Jack J2 on PCB?
No
Connect switch panel Ribbon Cable
Yes
Replace EPROM
Does unit turn "ON"?
No
Remove ribbon connector from J2; Place jumper between J2-1 & J2-5 Does unit turn "ON"?
No
Replace PCB
Yes
Replace Switch Panel

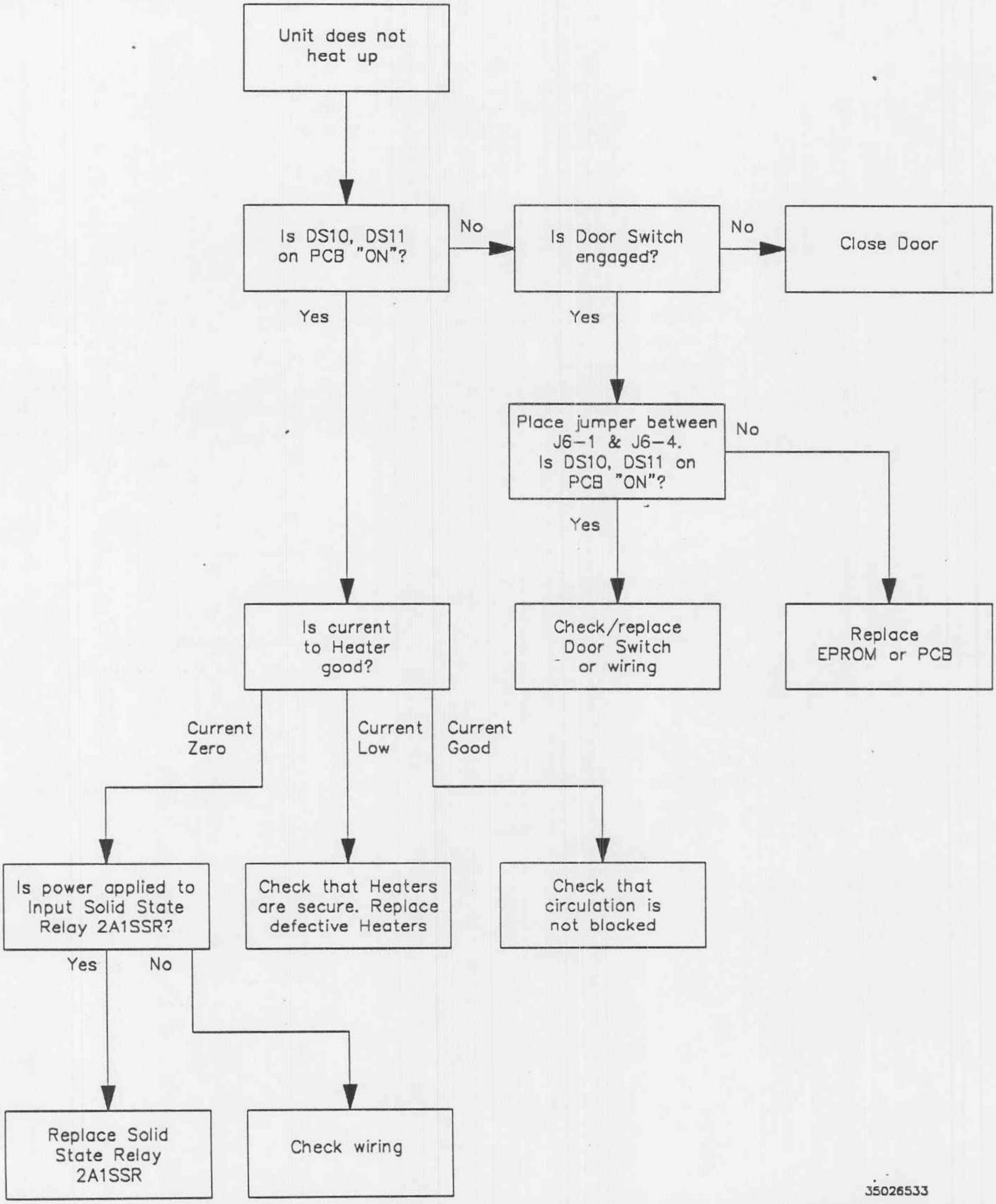
35026531

CIRCUIT BREAKER TRIPS


Circuit Breaker trips when unit is cold
Trips during heat-up
Trips immediately
Does chamber temperature display "OH"?
Check for short circuit or defective Circuit Breaker
Repair short or replace Circuit Breaker
No
Yes
Are Fan(s) operating properly?
Is DS10 on PCB "ON"?
Yes
No
Yes
No
Check and replace Shutdown Thermostat 2A1OT or Temperature Sensor
Replace Fan(s)
Replace EPROM or PCB
Replace Solid State Relay 2A1SSR (to Heaters)

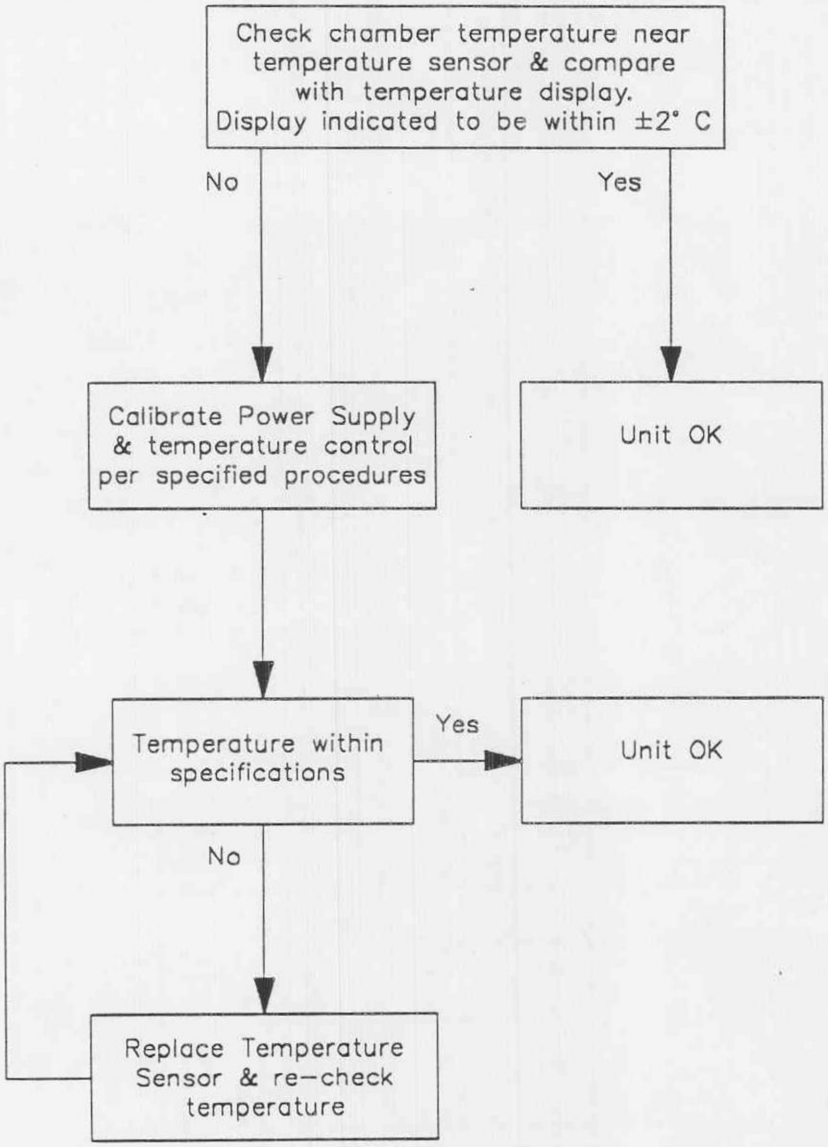
35026532

UNIT DOES NOT HEAT


Unit does not heat up
Is DS10, DS11 on PCB "ON"?
No
Is Door Switch engaged?
No
Close Door
Yes
Yes
Place jumper between J6–1 & J6–4. Is DS10, DS11 on PCB "ON"?
No
Yes
Is current to Heater good?
Check/replace Door Switch or wiring
Replace EPROM or PCB
Current Zero
Current Low
Current Good
Is power applied to Input Solid State Relay 2A1SSR?
Check that Heaters are secure. Replace defective Heaters
Check that circulation is not blocked
Yes
No
Replace Solid State Relay 2A1SSR
Check wiring

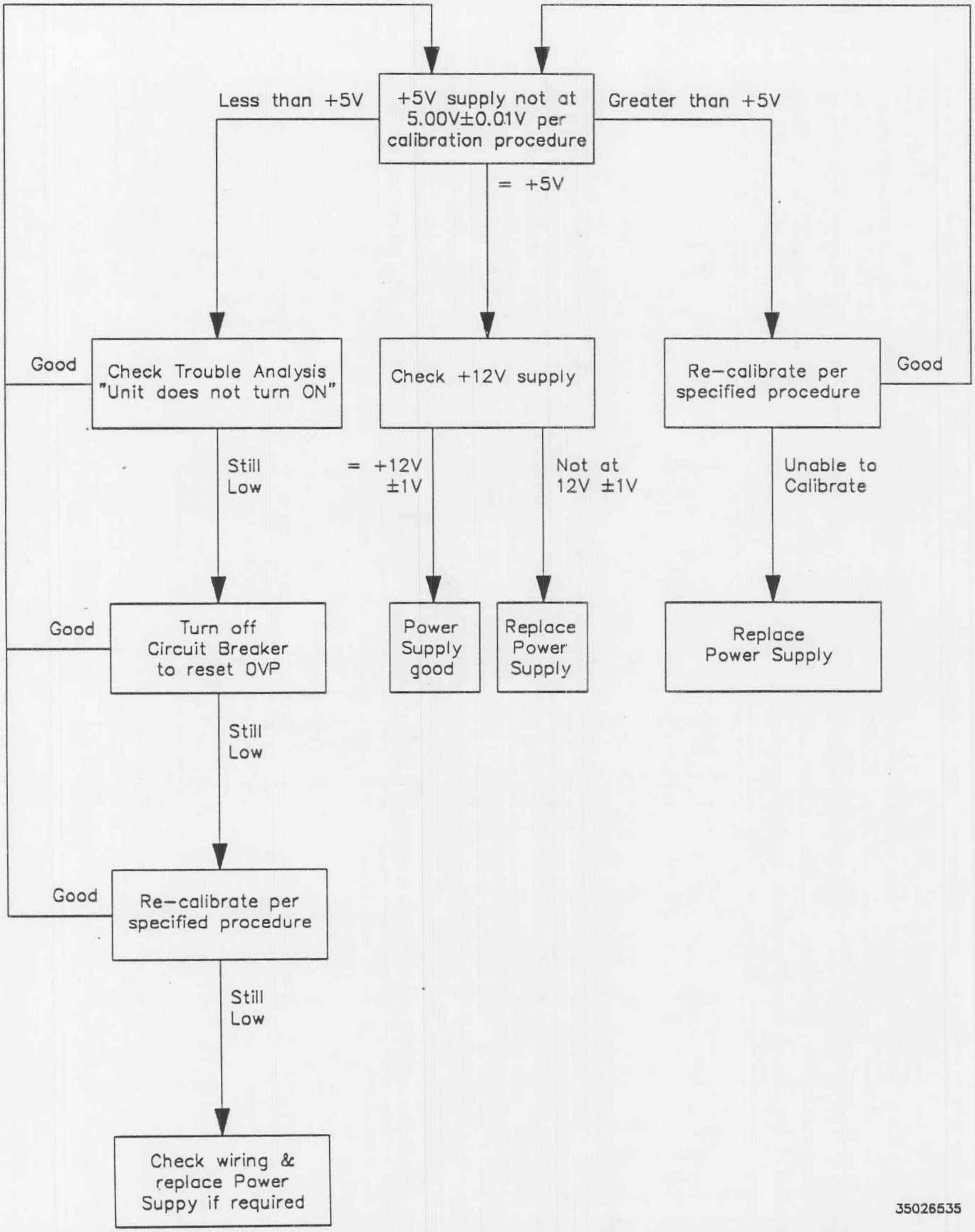
35026533

UNIT NOT AT PROPER TEMPERATURE


Check chamber temperature near temperature sensor & compare with temperature display. Display indicated to be within ±2° C
No
Yes
Calibrate Power Supply & temperature control per specified procedures
Unit OK
Temperature within specifications
Yes
Unit OK
No
Replace Temperature Sensor & re-check temperature

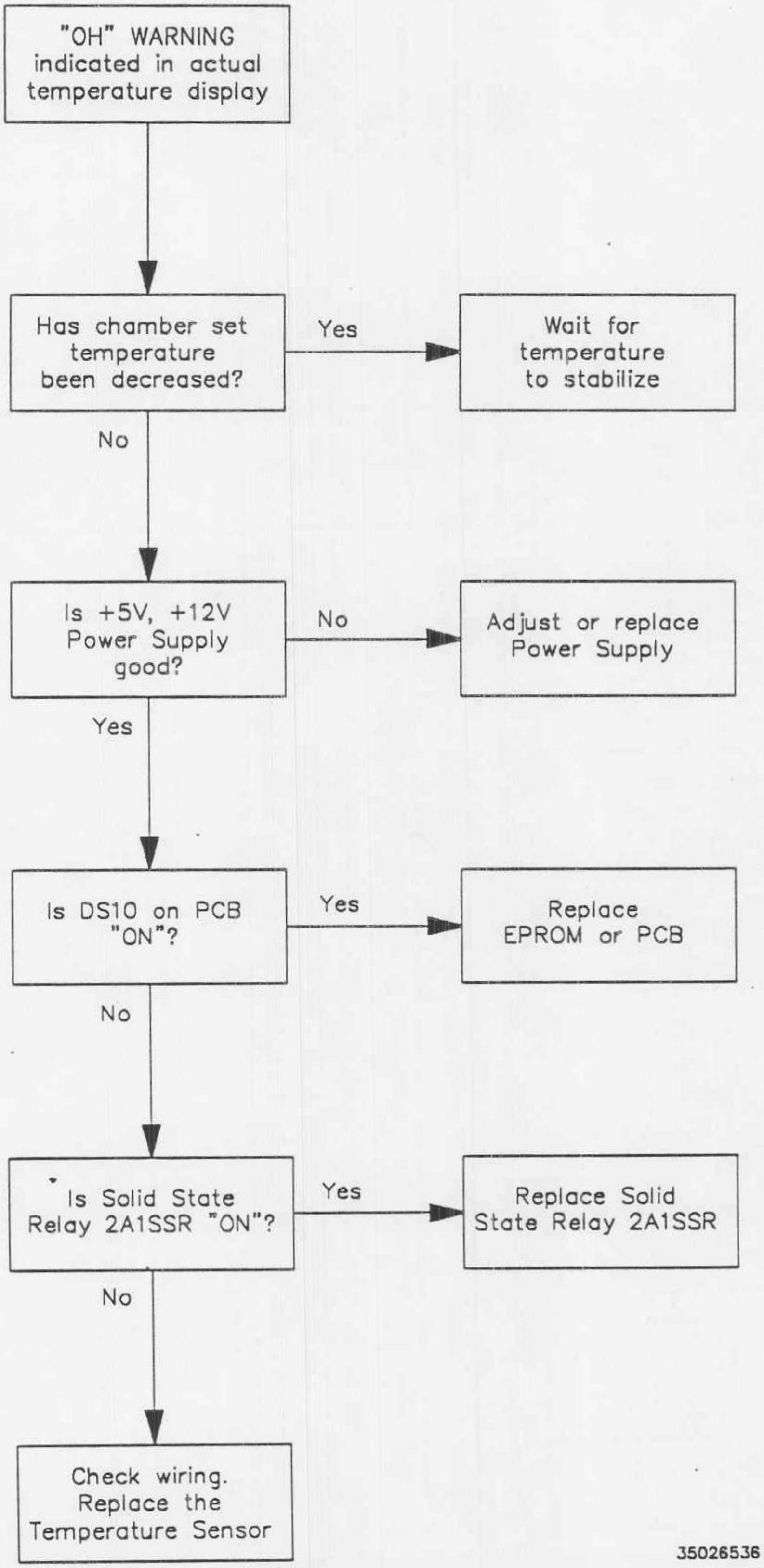
35026534

+5V, +12V POWER SUPPLY CHECK

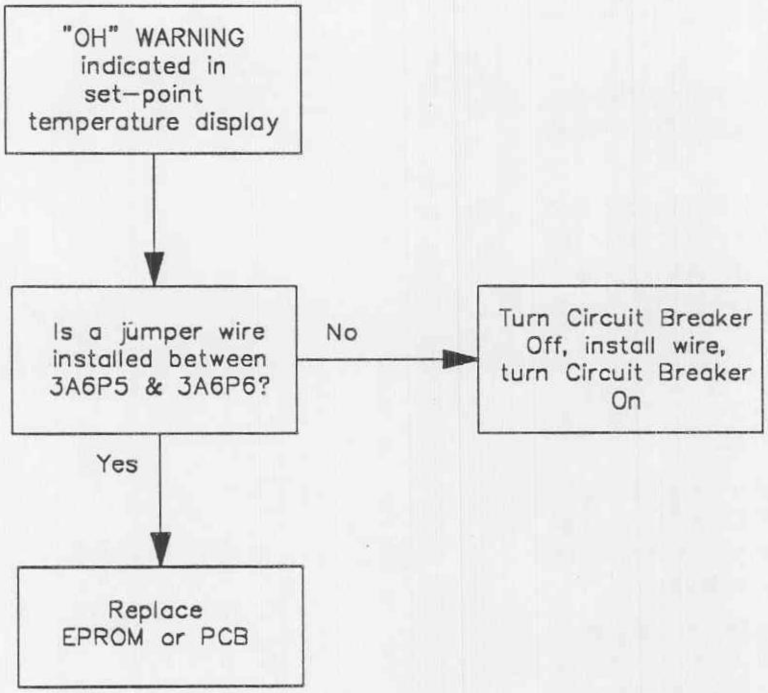

+5V supply not at 5.00V±0.01V per calibration procedure
Less than +5V
Greater than +5V
= +5V
Check Trouble Analysis "Unit does not turn ON"
Check +12V supply
Re–calibrate per specified procedure
Good
Good
Still Low
= +12V ±1V
Not at 12V ±1V
Unable to Calibrate
Good
Turn off Circuit Breaker to reset OVP
Power Supply good
Replace Power Supply
Replace Power Supply
Still Low
Good
Re–calibrate per specified procedure
Still Low
Check wiring & replace Power Suppy if required

35026535

"OH" WARNING INDICATED IN ACTUAL TEMPERATURE DISPLAY


"OH" WARNING indicated in actual temperature display
Has chamber set temperature been decreased?
Yes
Wait for temperature to stabilize
No
Is +5V, +12V Power Supply good?
No
Adjust or replace Power Supply
Yes
Is DS10 on PCB "ON"?
Yes
Replace EPROM or PCB
No
Is Solid State Relay 2A1SSR "ON"?
Yes
Replace Solid State Relay 2A1SSR
No
Check wiring. Replace the Temperature Sensor
35026536

"OH" WARNING INDICATED IN SET-POINT TEMPERATURE DISPLAY


"OH" WARNING indicated in set–point temperature display
Is a jümper wire installed between 3A6P5 & 3A6P6?
No
Turn Circuit Breaker Off, install wire, turn Circuit Breaker On
Yes
Replace EPROM or PCB

35026537

HEATER/FAN OPERATIONAL CHECKS

1. Check that the circuit breaker is ON. Press the ON button in the lower left corner of the control panel and close the door.
2. Using the set-temperature up and down arrow buttons, select a temperature that requires heat-up of the chamber.
3. DS11 and DS12 on the display printed circuit board (PCB) should be lit. DS11 indicates that the fans are on; and DS12 indicates that the heaters are on.
4. Open the chamber door. DS11 and DS12 should go out (off).
5. Close the chamber door.
6. Check the fan's electrical supply circuit:
   a. Using a digital voltmeter (DVM), check the voltage across 2A2TB10 and 2A2SSR4. Voltage should be 0VAC with the door open, and either 120 or 240VAC with the door closed.
   b. Check the current through 2A2SSR4 by placing amprobe on 2A1F and 2AF2. With the cabinet door closed, the amperage should be approximately 0.2 amps on a 120VAC electrical supply or 0.1 amps on a 240VAC electrical supply.
7. Check the heater electrical supply circuit.
   a. Using a DVM, check the voltage across 2A2TB10 and 2A1SSR2. Voltage should be 0 VAC with the door open, and either 120 or 240 VAC with the door closed.
   b. Check the current through 2A1SSR2 by placing amprobe on 2A4HTR and 2A3HTR. With the cabinet door closed, the amperage should be 8.5 amps on a 120VAC electrical supply or 4.25 amps on a 240VAC electrical supply.

SECTION 4. CALIBRATIONS AND ADJUSTMENTS

POWER SUPPLY VOLTAGE CALIBRATION 4-2

TEMPERATURE CONTROL CALIBRATION 4-2

CHART RECORDER CALIBRATION 4-3

DOOR ADJUSTMENT 4-4

CALIBRATIONS AND ADJUSTMENTS

POWER SUPPLY VOLTAGE CALIBRATION

WARNING

The power circuit must be ON to make electrical adjustments and calibrations. To prevent possible electrical shock and personal injury, do not make personal contact with the electrical circuit during adjustments and calibration.

1. Raise the control head assembly cover.
2. Remove the three screws that secure the power head assembly for access to the power supply components.
3. Check that the circuit breaker is ON. Press the ON button in the lower left corner of the control panel and let the temperature in the warming cabinet stabilize for 15 minutes.

NOTE

The control panel must be ON prior to conducting calibrations.

4. +5 Volt Adjustment:
   a. Place the DVM negative probe on 3A1P1 and the positive probe on 3A1P3 of the PCB.
   b. Adjust the +5V adjustment pot on the power supply until the reading on the DVM is +5.00±0.01 VDC on the meter.

NOTE

The adjustment pot is located at the bottom of the power supply. A small flat head screw driver is required for this adjustment.

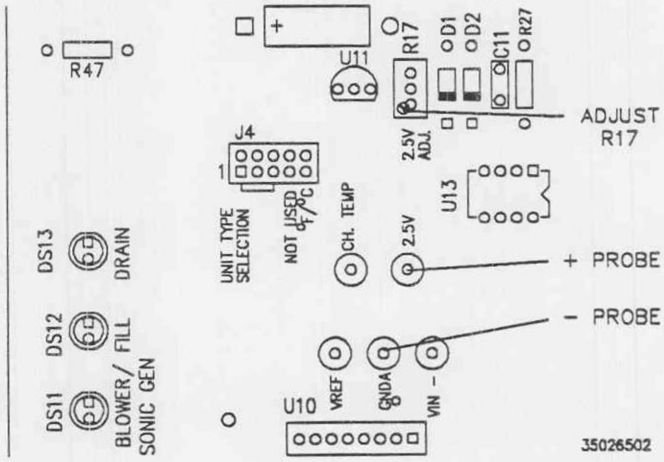
TEMPERATURE CONTROL CALIBRATION

1. Calibrate the power supply voltage (see "Power Supply Voltage Calibration") before making the Temperature Control Calibration.

NOTE

The control panel must be ON prior to conducting calibrations.

2. Adjust 2.5 VDC on the PCB:
   a. Connect the DVM negative probe to test point GNDA and the positive probe to test point 2.5V, using test clips.
   b. Adjust R17 (2.5V adjust), if required, to provide a DVM reading of 2.500 ±0.005 VDC.



TEMPERATURE CALIBRATION VOLTAGE ADJUSTMENT

CHART RECORDER CALIBRATION

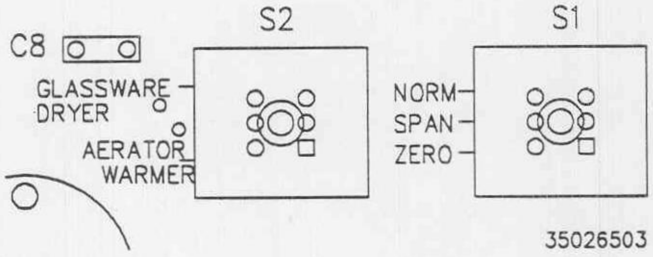
NOTE

This calibration should only be done by qualified service personnel.

Recorder calibration should be done at initial installation, once a year, or when there is a major recorder problem.

Always ensure that the power supplies and printed circuit board are in calibration BEFORE attempting recorder calibration. (See "Power Supply Voltage Calibration" and "Temperature Control Calibration").

The pen is calibrated for NULL and SPAN. There is no hysteresis or linearity adjustment with this recorder. No calibration should be attempted unless the power has been ON for at least 20 minutes.


S2
S1
C8
GLASSWARE DRYER
AERATOR WARMER
NORM
SPAN
ZERO
35026503

RECORDER CALIBRATION TOGGLE SWITCHES

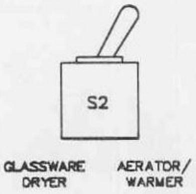
Preparation

1. Turn lock or key located inside the storage compartment at the lower right-hand corner of the back wall.
2. Raise and lock the control head.
3. Install a new chart on the recorder. Fold back the lower right section to expose the calibration adjustments. Pull recorder door switch into the out position.

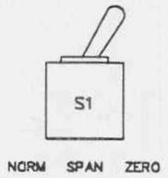
Pen Calibration

NOTE

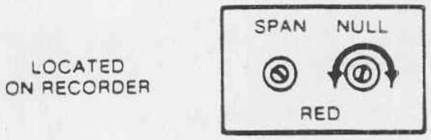
Ensure switch S2 is in the Aerator/ Warmer position.


S2
GLASSWARE DRYER
AERATOR/ WARMER

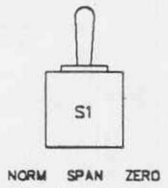
1. Set PEN switch S1 to the ZERO position.


S1
NORM
SPAN
ZERO

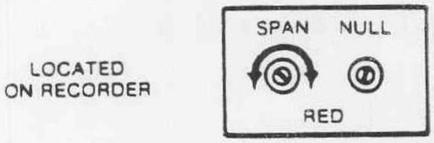
2. Adjust the null until pen aligns at the 0% line of the chart (innermost line).


LOCATED ON RECORDER
SPAN
NULL
RED

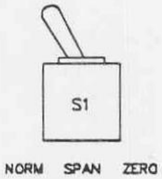
3. Set S1 to the SPAN position.


S1
NORM
SPAN
ZERO

4. Adjust the span until pen aligns at the 100% line of the chart (outermost line).



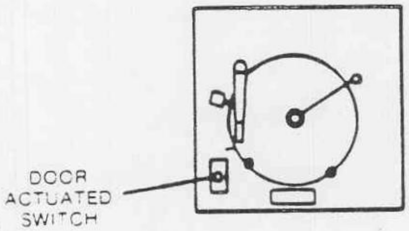
5. Repeat steps 1 thru 4 several times and check for correct position of pen at 0 and 100%. Readjust pen as required. Make last setting at 0%.
6. Set S1 to the NORM position.



NOTE

Switch S2 remains in the Aerator/Warmer position.

7. Manually push the door actuated switch into the middle position.



8. Secure the warming cabinet as outlined in the next paragraph.

Secure Warming Cabinet

1. Remove test chart and install a new chart on the recorder.
2. Raise and latch the control head.
3. Raise and secure the control box cover.
4. Lower and lock the control head.

DOOR ADJUSTMENT

1. Open the door and loosen slightly the two hex head screws that secure the hinges to the warming cabinet.
2. Close the door and realign so that it is square and aligned with the front of the warming cabinet.
3. Open the door and while keeping it in proper alignment tighten the hex head screws that secure the hinges to the warming cabinet.

SECTION 5. REPAIR

SAFETY DURING REPAIR 5-2
ACCESS TO CONTROL HEAD COMPONENTS 5-2
ACCESS TO CONTROL BOX COMPONENTS 5-2
CIRCUIT BREAKER REPLACEMENT 5-2
FUSE REPLACEMENT 5-3
TRANSFORMER REPLACEMENT 5-3
LOW VOLTAGE POWER SUPPLY REPLACEMENT 5-3
RELAY REPLACEMENT 5-3
FAN REPLACEMENT 5-5
HEATER REPLACEMENT 5-5
THERMOSTAT REPLACEMENT 5-5
TEMPERATURE SENSOR REPLACEMENT 5-5
EPROM REPLACEMENT 5-5
PRINTED CIRCUIT BOARD REPLACEMENT 5-6
RECORDER REPLACEMENT
(Optional Equipment) 5-7
DOOR SWITCH REPLACEMENT 5-7
DOOR GASKET REPLACEMENT 5-7

REPAIR

SAFETY DURING REPAIR

WARNING

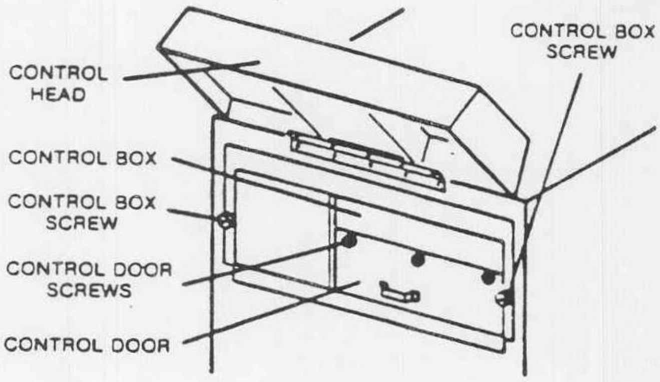
Turn off or disconnect the warming cabinet electrical supply before making repairs to prevent injury from electrical shock.

ACCESS TO CONTROL HEAD COMPONENTS

1. Open center section door.
2. Turn screw in lower right corner to release the control head.
3. Raise the control head and secure it in the raised position.
4. Turn OFF circuit breaker.

ACCESS TO CONTROL BOX COMPONENTS

1. Raise the control head as outlined under "Access to Control Head Components."
2. Turn OFF or disconnect the electrical supply to the warming cabinet, remove the three screws at the top of the control door, and open the control door.



CONTROL HEAD & BOX

3. Disconnect the three control box electrical cord plug connectors from the printed circuit board by pulling them from the mating sockets on the board.
4. Remove the two control box securing screws, one on each side.
5. Pull the control box forward on the track until it stops against the locking mechanism stop.

NOTE

Many components can now be serviced from the front or top of the control box. Instructions continue for removal of the control box from the warming cabinet to service the heaters, fans, door switch, low voltage power supply, and thermostat.

6. Disconnect the blue, brown, and green power supply wires from the power supply terminal block on the back wall of the control box. Note the location of each wire for reconnection.
7. Pull electrical supply line cable through the strain relief.
8. Disconnect the door switch cable and pull it down through the hole in the bottom of the control box.
9. Reach inside the control box from the top and pull up on the control box mounting stop to release the control box and at the same time pull it forward from the warming cabinet.

CIRCUIT BREAKER REPLACEMENT

WARNING

Turn OFF power at main disconnect box (off unit) to remove all incoming power.

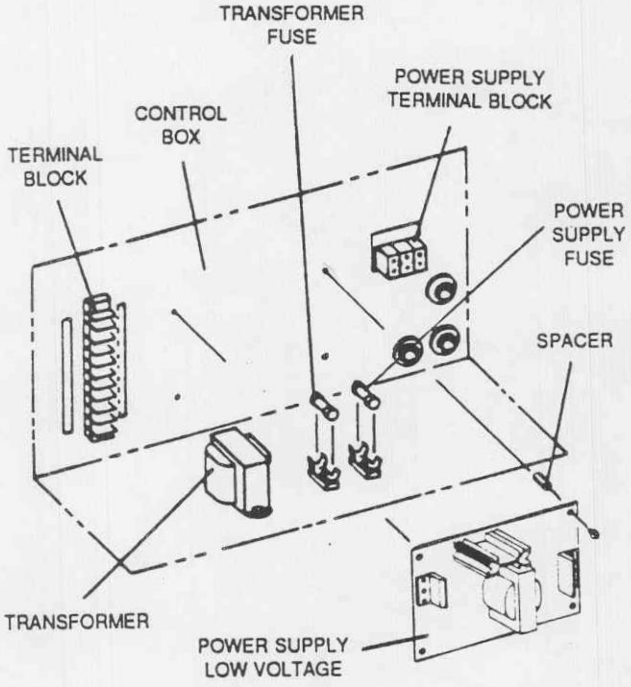
1. To replace the circuit breaker, follow instructions as outlined in steps 1 and 2 under "Access to Control Box Components."
2. Disconnect the wires from the circuit breaker. Note location of wires for reassembly.
3. Press the clips on each side of the circuit breaker, behind the panel, that secure it and remove forward from the panel.

FUSE REPLACEMENT

1. To replace either the power supply fuse or the transformer fuse, follow instructions as outlined in steps 1 and 2 under "Access to Control Box Components" for access to the fuse.

CAUTION *Be sure to replace with same rating and type of fuse.*

2. Reach inside and replace the fuse in the fuse holder.



CONTROL BOX

TRANSFORMER REPLACEMENT

1. To access the transformer, follow instructions as outlined in steps 1 thru 5 under "Access to Control Box Components."
2. Disconnect the wires. Note location of wires for reassembly.
3. Replace the transformer which is secured to the bottom of the control box with two bolts, nuts, and washers.

LOW VOLTAGE POWER SUPPLY REPLACEMENT

1. To access the power supply, follow instructions as outlined in steps 1 and 2 under "Access to Control Box Components."
2. Remove plugs 1P and 2P from either side of the power supply.
3. Remove the four screws that secure the power supply.
4. After replacing the power supply, calibrate it as outlined in "Power Supply Voltage Calibration."

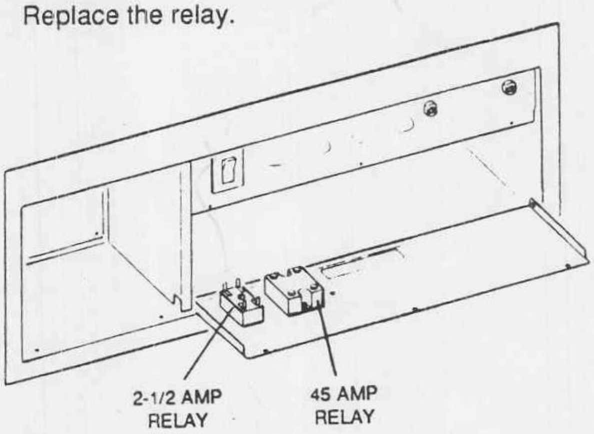
RELAY REPLACEMENT

A solid-state 45A and a 2.5A relay are mounted to the backside of the control door.

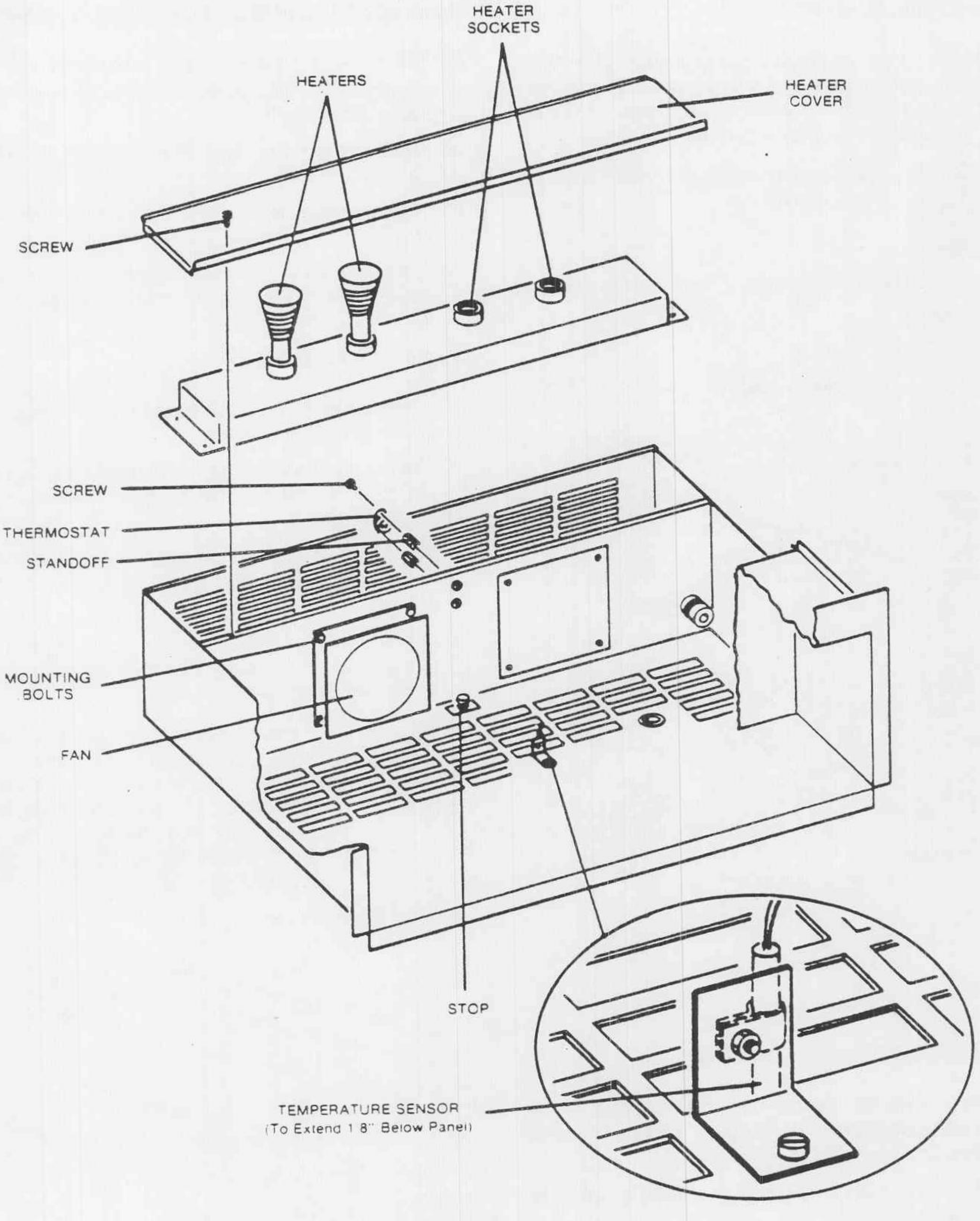
1. To replace the relays, follow instructions as outlined in steps 1 and 2 under "Access to Control Box Components."
2. Note the exact location of wire connections for reassembly and then remove relay wire connections.
3. When mounting the new relay, apply a generous amount of heatsink compound to the base of the relay before securing it in place.

CAUTION *To prevent possible fire damage caused by the heating up of wires, eliminate the possibility of any faulty connections by ensuring that the connectors are properly crimped and the screws for wire termination on the solid-state relay are securely tightened.*

4. Replace the relay.



LOCATION OF RELAYS


HEATER SOCKETS
HEATERS
HEATER COVER
SCREW
SCREW
THERMOSTAT
STANDOFF
MOUNTING BOLTS
FAN
STOP
TEMPERATURE SENSOR
(To Extend 1 8" Below Panel)

CONTROL BOX COMPONENTS

FAN REPLACEMENT

1. To replace the fan, remove the control box from the warming cabinet as outlined in steps 1 thru 9 under "Access to Control Box Components."
2. Disconnect the fan wiring.
3. Remove the four bolts, nuts, and washers that secure the fan.

HEATER REPLACEMENT

1. To replace heaters, remove the control box from the warming cabinet as outlined in steps 1 thru 9 under "Access to Control Box Components."
2. Remove the heater cover which is secured with three screws.
3. Unscrew the heaters from the heater sockets. Replace in the exact location from which removed.

THERMOSTAT REPLACEMENT

1. To replace the thermostat, remove the control box from the warming cabinet as outlined in steps 1 thru 9 under "Access to Control Box Components."
2. Remove the heater cover which is secured with three screws.
3. Remove wires from the thermostat.
4. Remove the thermostat which is secured to standoffs, with screws.

TEMPERATURE SENSOR REPLACEMENT

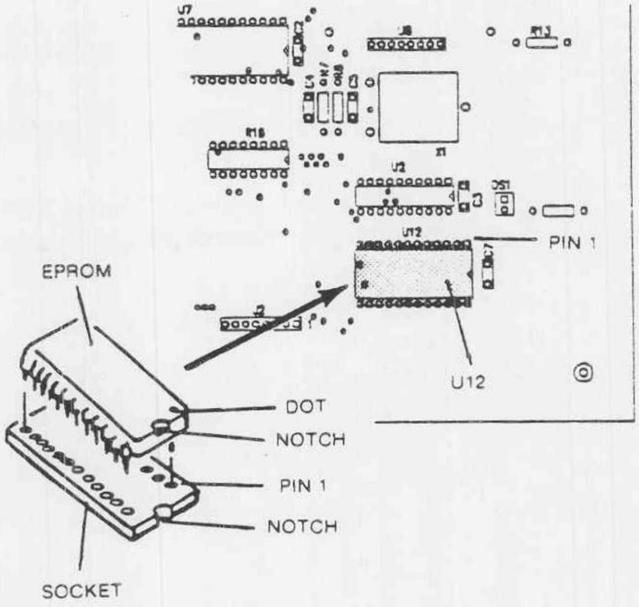
1. To replace the temperature sensor, follow instructions as outlined in steps 1 thru 5 under "Access to Control Box Components."
2. Loosen the mounting bracket. Remove the temperature sensor.
3. Disconnect the 3-pin plug from the control box.

EPROM REPLACEMENT

WARNING

To avoid possible damage to the EPROM or PC board, power down the main circuit breaker before removing or installing the new EPROM.

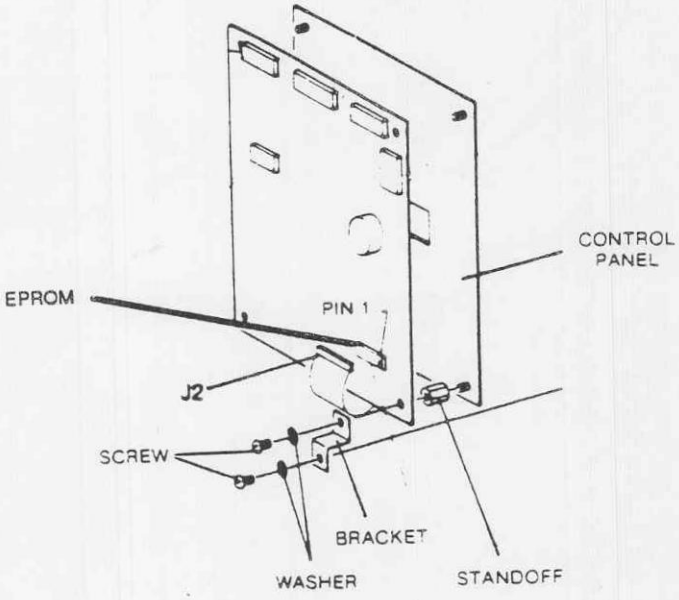
Install the EPROM into U12, noting the orientation of pin 1. The EPROM dot, or notch, should point to the right and align with the notch on socket U12 when the EPROM is correctly positioned.



EPROM INSTALLATION

PRINTED CIRCUIT BOARD REPLACEMENT

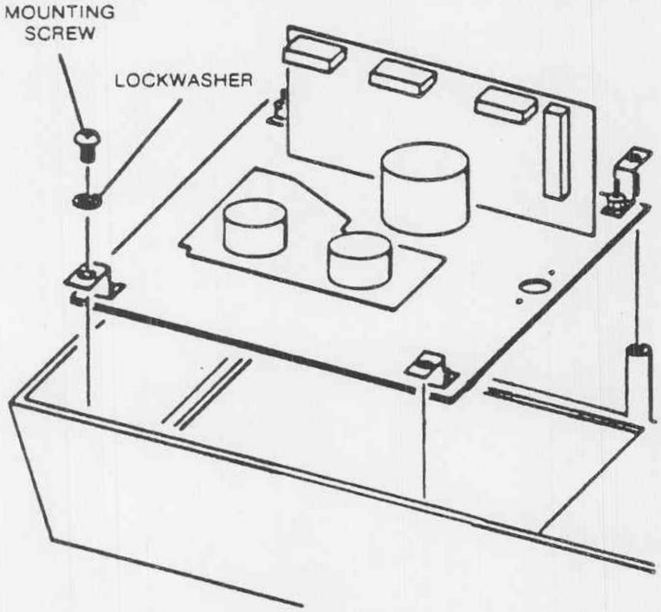
1. To replace the PC board, follow instructions as outlined in steps 1 thru 3 under "Access to Control Head Components."
2. Disconnect all electrical plug connections from the printed circuit board. Note location of plugs for reassembly.
3. Refer to figure below. Remove the four screws and lockwashers on the corners, that secure the assembly to the control head.
4. Separate the printed circuit board from the control panel as follows:
   a. Disconnect the control panel ribbon cable at the J2 connector.
   b. Remove the six screws that secure the printed circuit board to the control panel and separate them.
5. Reassemble the replacement circuit board to the control panel.
6. Exchange EPROM from old circuit board to replacement circuit board.
7. Install the EPROM as outlined in "EPROM Replacement." Check that the jumpers are connected properly as outlined in "Jumper Configuration."
8. Replace the assembly in the control head and reconnect the electrical connections to the printed circuit board.
9. Adjust the volume as outlined in "Volume Control."
10. Calibrate the temperature control as outlined in "Calibrating Temperature Control."
11. If unit is equipped with a recorder, calibrate the recorder as outlined in "Recorder Calibration."



PC BOARD REPLACEMENT

RECORDER REPLACEMENT (Optional Equipment)

1. To replace the recorder, follow instructions as outlined in steps 1 thru 3 under "Access to Control Head Components."
2. Remove the 10-pin plug connection from the recorder.
3. Remove the four securing screws and washers that secure the recorder to the control head which releases the recorder for replacement.
4. Install new recorder and calibrate as outlined in "Recorder Calibration."



RECORDER

DOOR SWITCH REPLACEMENT

1. To replace the door switch, remove the control box from the warming cabinet as outlined in steps 1 thru 9 under "Access to Control Box Components."
2. Remove wires from the door switch.
3. Press the clips on each side of the switch, behind the panel, that secures it and remove forward from the panel.

DOOR GASKET REPLACEMENT

1. Replacement of gasket at outer perimeter of door:
   a. Raise the edge of the gasket to expose the screws that secure the door plate (5540)/mounting strips (5545, 5550) and gasket. Remove the door plate or mounting strips.
   b. Assemble the door gasket to the door plate or mounting strips and then secure both to the door with the screws that were removed.
2. Replacement of gasket between upper and lower compartments on 5545 and 5550 Warming Cabinets:
   a. Raise the edge of the gasket to expose the screws that secures both the strip and the gasket. Remove the strip of metal that secures the gasket.
   b. Assemble the gasket to the strip of metal and then secure both to the door with the screws that were removed.

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OPERATOR MANUAL

Castle®

5540
5545
5550
WARMING CABINETS

MDT Biologic Company
1777 East Henrietta Road
P.O. Box 23077
Rochester, New York 14692, U.S.A.

Technology for Life

OPERATOR MANUAL 350264 (3/8/90)

Related Publications:

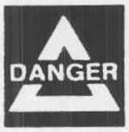
Installation Instructions	**350263**
Service Manual	**350265**
Parts Catalog	**350266**

IMPORTANT

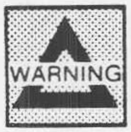
Special safety signs and instructions are used in this manual. Read them carefully before using the warming cabinet. It is the responsibility of the user to follow all recommendations.

DESCRIPTION OF SYMBOLS & NOTES IN MANUAL

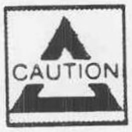
The following symbols are related notes that appear in this manual.



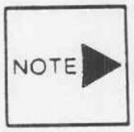
"Danger" notes alert the user to the possibility of serious personal injury which could be fatal.



"Warning" notes alert the user to the possibility of personal injury.



"Caution" notes alert the user to the possibility of damage to the equipment.



"Notes" alert the user to pertinent facts and conditions.

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IMPORTANT

The special safety instructions that follow appear within the manual. Read them carefully before operating the warming cabinet, and follow the instructions.

DANGER "Danger" notes alert the user to the possibility of serious personal injury which could be fatal.

Operating Instructions **page 2**

Do not relocate the warming cabinet to, or operate the warming cabinet in, any area where flammable agents may be introduced into the atmosphere. This unit contains electrical components designed to heat and circulate air within the cabinet. Contact with an airborne flammable agent may cause explosion or fire resulting in serious personal injury, or damage to equipment and surroundings.

Loading The Cabinet **page 4**

Do not place items in the warming cabinet which could introduce flammable agents into the cabinet atmosphere. This unit contains electrical components designed to heat and circulate air within the cabinet. Contact with an airborne flammable agent may cause explosion or fire resulting in serious personal injury, or damage to equipment and surroundings.

WARNING "Warning" notes alert the user to the possibility of personal injury.

Selecting the Set-Temperature **page 3**
Unloading The Cabinet **page 4**

Items heated to temperatures over 49°C (120°F) can burn skin tissue. Do not heat any item that may come in contact with bare skin to temperatures exceeding 49°C (120°F). If you do heat items to temperatures in excess of 49°C, temperatures, be careful when removing those items from the warming cabinet. Removing hot items with an unprotected hand may result in burns to skin tissue. To avoid possible burns, wear protective gloves or use tongs when removing hot items from the warming cabinet.

Unloading The Cabinet **page 4**

When the warming cabinet is turned off, the internal temperature of the cabinet's contents will not decrease as rapidly as the internal cabinet temperature itself. Some glassware, if heated to high temperature, may react violently when brought into sudden contact with lower temperatures of an outside environment. To protect your eyes from possible shattering glass, wear approved safety glasses when removing glassware from the cabinet.

Loading The Cabinet **page 4**
Unloading The Cabinet **page 4**

When the warming cabinet is operating, contact with the interior surface of the door or any of the heated compartments could result in burns to the skin. Avoid contact with interior cabinet surfaces when replenishing or removing items in the warming cabinet.

Condition Indicators **page 5**

If a problem occurs, and relocation of heated items is necessary, allow sufficient time (a minimum of two hours) for the internal temperature of the items to drop to a level which would enable removal without causing possible damage to the items, or resulting in injury to personnel.

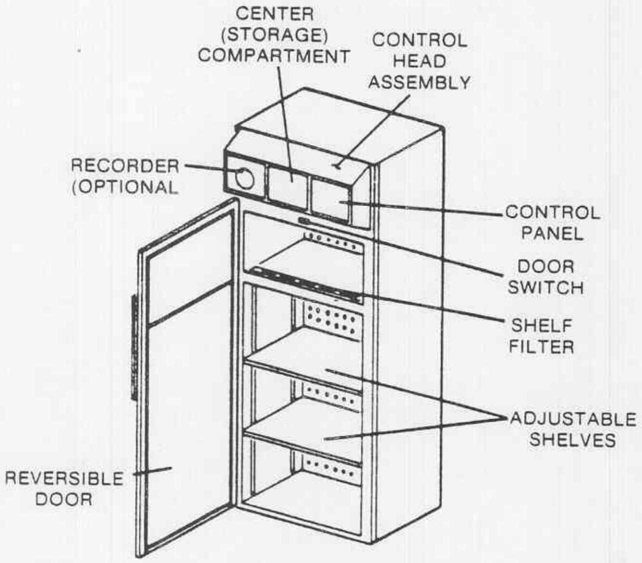
Shelf Adjustment **page 5**

To prevent burns to the skin when adjusting shelf height, either allow sufficient time (at least two hours) for the shelves to cool before handling them, or wear protective gloves when handling hot shelves.

Preventive Maintenance **page 6**

The filter surroundings may be hot. Avoid possible burns to skin by allowing the cabinet to cool before removing the filter.

5540, 5545 & 5550 WARMING CABINET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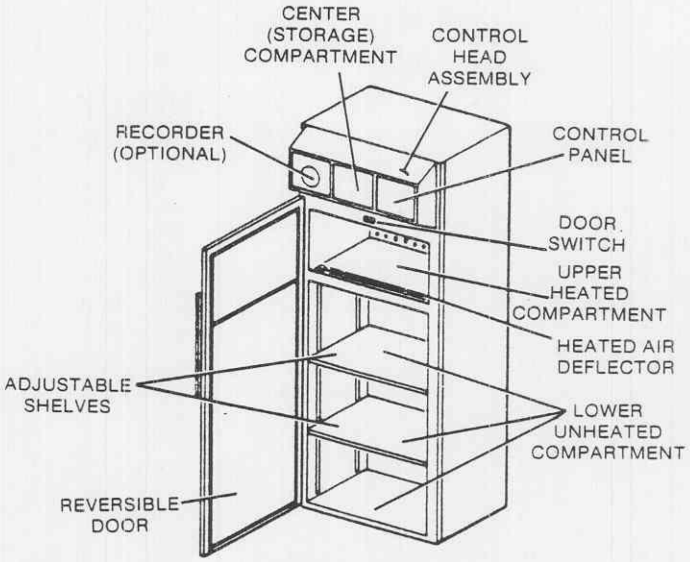
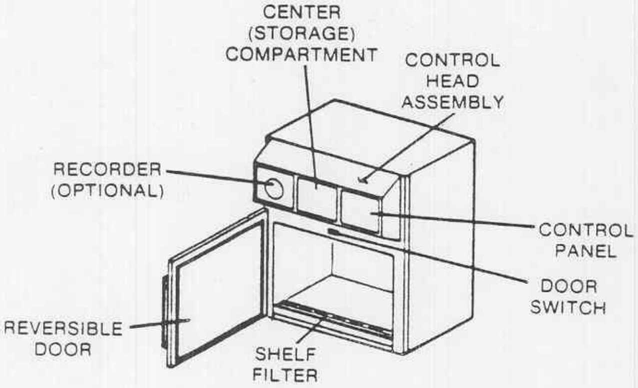
CONTROL HEAD ASSEMBLY
RECORDER (OPTIONAL
CONTROL PANEL
DOOR SWITCH
SHELF FILTER
ADJUSTABLE SHELVES
REVERSIBLE DOOR

MODEL 5550
(Cabinet Model)


CENTER (STORAGE) COMPARTMENT
CONTROL HEAD ASSEMBLY
RECORDER (OPTIONAL)
CONTROL PANEL
DOOR SWITCH
UPPER HEATED COMPARTMENT
HEATED AIR DEFLECTOR
ADJUSTABLE SHELVES
LOWER UNHEATED COMPARTMENT
REVERSIBLE DOOR

MODEL 5545
(Cabinet Model)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CONTROL HEAD ASSEMBLY
RECORDER (OPTIONAL)
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REVERSIBLE DOOR
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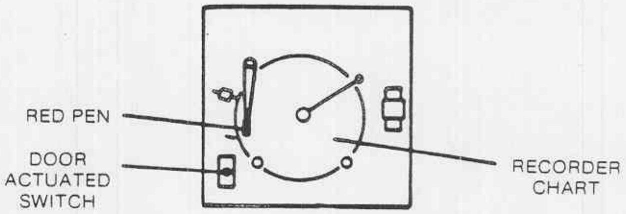
(Cabinet Model)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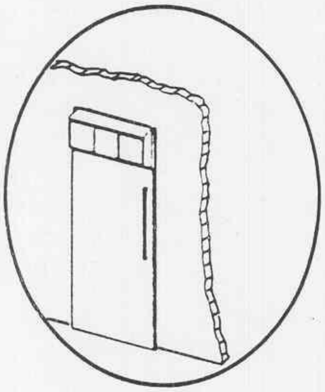
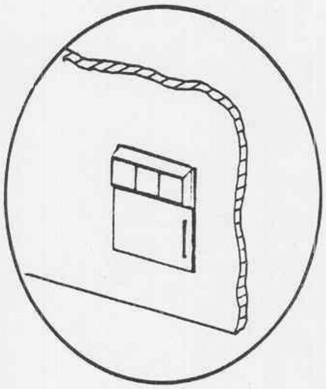


MODEL 5545 & 5550
(Recessed Model)



MODEL 5540
(Recessed Model)

GENERAL

Castle 5540, 5545, and 5550 Warming Cabinets are designed for the heating and storage of solutions, blankets, towels, and other dry goods. Cabinet temperature is adjustable from 36°C (97°F) to 71°C (160°F).

The compact **5540** Warming Cabinet provides one compartment capable of holding 20 two-liter flasks. Its filter, located in the front of the compartment, filters the heated air and directs it upward.

The **5545** Warming Cabinet has an upper heated compartment and a lower unheated compartment with two adjustable shelves. Air from the upper compartment does not circulate into the lower compartment, so the lower compartment remains at ambient temperature regardless of the upper compartment's temperature.

The **5550** Warming Cabinet circulates heated air evenly over items placed on each of its four shelves. Each shelf is capable of holding 20 two-liter flasks. The two shelves provided are adjustable, thus allowing the height of the lower three compartments to be adjustable. The filter, provided in the top shelf, filters the heated air from the lower shelves and directs it upward.

DESCRIPTION OF COMPONENTS

Door Switch

Closing the warming cabinet door depresses the door switch and allows electrical power to contact the heating circuit. Opening the door, releases the door switch and shuts off electrical power to the heating circuit.

Reversible Door

The warming cabinet door swings open either to the left or right, depending upon the individual unit. If you prefer that the door swing open in the opposite direction, contact a fully authorized MDT Biologic Company Product Support Representative to perform the conversion.

Filter

Keeps airborne dust and debris from entering the heated compartment, and directs the heated air upward.

Control Head Assembly
Center Storage Compartment

May be used for ready access of recorder charts, ink pens cartridges, etc.

Optional Recorder

A warming cabinet may be equipped with an optional recorder to record the temperature of the cabinet over a 24 hour period.

Recorder Chart

The recorder chart is graduated in single degree increments from 0° to 100° centigrade (32° to 212° farenheit) over a 24 hour period.

Door Actuated Switch

Closing the recorder door triggers this switch to start the recorder; opening the recorder door triggers this switch to stop the recorder. If you wish to record the cabinet temperature while the recorder door is open, simply pull the door actuator switch outward.

NOTE ▶ When you open the recorder door, the pen arm automatically lifts off the chart and moves to the holding ramp where it will remain until you close the recorder door.

Adjustable Shelves (Models 5545 and 5550 Only)

To increase or decrease the height of the three compartments, you may raise, lower, or remove the two adjustable shelves.

Main Power Switch/Circuit Breaker

Turning off the main power switch/circuit breaker, located under the control bezel, removes all electrical power from the unit.

Touch Control Panel

Power ON

Pressing this button turns on the warming cabinet, and activates the control panel.

LED Indicator

Pressing the **ON** button illuminates the green "ON" LED.

Power OFF

Pressing this button turns off the warming cabinet, de-activatates the control panel, and allows the cabinet to return to ambient temperature.

Set-Temp. Up and Down Arrow Buttons

Pressing these buttons allows you to increase or decrease the cabinet temperature in 1°C (1 or 2°F) increments. Set-temperatures range from 36°C (97°F) to 71°C (160°F).

Actual Temperature Display

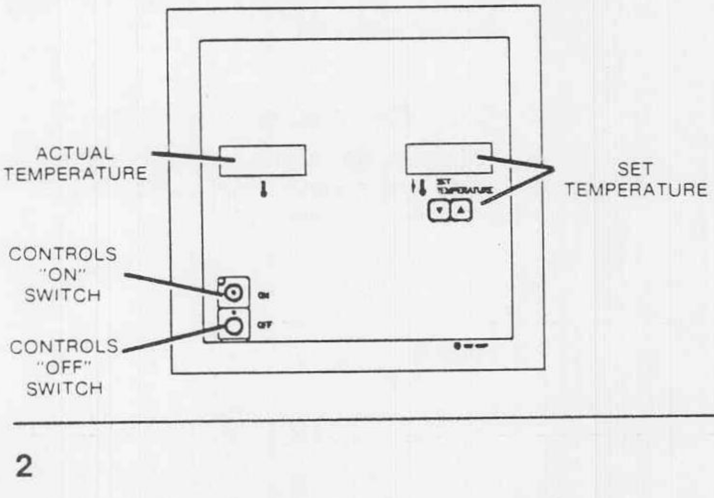
While the control panel is activated, the left-hand temperature display continuously indicates the actual temperature inside the warming cabinet.

Set-Point Temperature Display

While the control panel is activated the right-hand temperature display continuously indicates the temperature you selected for the warming cabinet to maintain.

Condition Indicator

"**OH**" appears in the temperature selected display if the temperature of the warming cabinet rises above the set temperature by more than 4°C (7°F), thus alerting you to an overheat condition.



OPERATING INSTRUCTIONS

DANGER

Do not relocate the warming cabinet to, or operate the warming cabinet in, any area where flammable agents may be introduced into the atmosphere. This unit contains electrical components designed to heat and circulate air within the cabinet. Contact with an airborne flammable agent may cause explosion or fire resulting in serious personal injury, or damage to equipment and surroundings.

NOTE ▶

To prevent voiding the product warranty, do not operate the warming cabinet until an MDT Product Support Representative has performed the required mechanical adjustments and electrical tests.

NOTE ▶

If the warming cabinet is equipped with an optional recorder, replace the 24 hour recorder chart on a daily basis. Refer to "Recorder Chart Replacement" on page 5.

Turning The Warming Cabinet On

1. Be sure that the main power circuit breaker located under the control bezel is turned on.
2. Turn the warming cabinet on by pressing the green **ON** button in the lower left corner of the control panel.
   - The left-hand temperature display will show the current temperature inside the cabinet.
   - The unit will begin heating the inside of the cabinet, providing that the door is closed. The unit will not begin heating if the door is open. If you open the door while the unit is operating, the heating system will shut off and remain off until you close the door.

Selecting The Set-Temperature

WARNING Items heated to temperatures over 49°C (120°F) can burn skin tissue. Do not heat any item that may come in contact with bare skin to temperatures exceeding 49°C (120°F).

Set the cabinet temperature by pressing the up and down SET-TEMPERATURE arrow buttons. Set-temperature ranges from 36°C (97°F) to 71°C (160°F).

- To change the cabinet temperature by single degree increments, press and release either arrow button.
- To rapidly advance through the temperature range, press and hold either arrow key until the desired temperature appears on the display.

NOTE ▶ The temperature displayed will advance slowly at first, but after three seconds, will advance quickly.

You may change the warming cabinet's set-temperature at any time — even while the unit is operating. However, if the unit is operating, do not lower the set-temperature to more than 4°C below the actual temperature, otherwise the warming cabinet will display an overheat condition.

If, while the unit is operating, you wish to lower the set-temperature to more than 4°C below the actual temperature, follow either of the procedures below.

Procedure 1 Decrease the set-temperature 4°C below the actual temperature. Wait for the temperature to drop to the new set-temperature. Repeat the process until the cabinet reaches the desired temperature.

Procedure 2 Open the cabinet door. Watch the actual temperature shown on the display. When the temperature displayed matches your new desired set-temperature, close the door, and using the set-temperature arrow buttons, select a new set-temperature.

Temperature Conversion Chart

°C =	°F	°C =	°F	°C =	°F
36	97	48	118	60	140
37	99	49	120	61	142
38	100	50	122	62	144
39	102	51	124	63	145
40	104	52	126	64	147
41	106	53	127	65	147
42	108	54	130	66	151
43	109	55	131	67	153
44	111	56	133	68	154
45	113	57	135	69	156
46	115	58	136	70	158
47	117	59	138	71	160

Loading The Cabinet

DANGER

Do not place items in the warming cabinet which could introduce flammable agents into the cabinet atmosphere. This unit contains electrical components designed to heat and circulate air within the cabinet. Contact with an airborne flammable agent may cause explosion or fire resulting in serious personal injury, or damage to the equipment and surroundings.

WARNING

When the warming cabinet is operating, contact with the interior surface of the door or any of the heated compartments could result in burns to the skin. Avoid contact with interior cabinet surfaces when replenishing or removing items in the warming cabinet.

CAUTION

Do not store items in the heated section of the warming cabinet that may be packaged in material unable to withstand the selected temperature.

Below are some pointers to bear in mind when placing solution flasks and dry goods into the warming cabinet:

- Always place solutions on the upper-most shelves, regardless of whether they are the only items stored in the cabinet or whether they are stored with dry goods.
- Storing dry goods and solution flasks on the same shelf is acceptable.
- Do not place items whose combined weight exceeds 100 lbs. onto the adjustable shelves.
- Always maintain a 2-inch clearance between the items and the ceiling of the cabinet chamber to permit unobstructed circulation of heated air.
- Position items in the warming cabinet so that they do not obstruct the circulation of air.
- Ensure that items are stored in the warming cabinet long enough to heat through before removing them for use. Allow a minimum of **6 hours for dry goods** to reach the set-temperature, and a minimum of **8 hours for solutions** to reach set-temperature.

Unloading The Cabinet

When unloading solution flasks, and dry goods from the warming cabinet, bear in mind the following safety points:

WARNINGS

When the warming cabinet is turned off, the internal temperature of heated glassware and dry goods will not decrease as rapidly as the internal cabinet temperature. Some glassware, if heated to high temperature, may react violently when brought into sudden contact with lower temperatures of an outside environment. To protect your eyes from possible shattering glass, wear approved safety glasses when removing glassware from the cabinet.

Items heated to temperatures over 49°C (120°F) can burn skin tissue. Do not heat any item that may come in contact with bare skin to temperatures exceeding 49°C (120°F). If you do heat items to temperatures in excess of 49°C, temperatures, be careful when removing those items from the warming cabinet. Removing hot items with an unprotected hand may result in burns to skin tissue. To avoid possible burns, wear protective gloves or use tongs when removing hot items from the warming cabinet.

When the warming cabinet is operating, contact with the interior surface of the door or any of the heated compartments could result in burns to the skin. Avoid contact with interior cabinet surfaces when removing or replenishing items in the warming cabinet.

Turning The Warming Cabinet Off

Turn the cabinet off by pressing the red **OFF** button in the lower left corner of the control panel.

CONDITION INDICATORS

An overheat condition occurs if the interior temperature of the cabinet rises to 4°C (7°F) over the selected temperature. If the warming cabinet experiences an overheat condition, the unit will automatically shut down the electrical power to the heating circuit, display the letters **OH** in the temperature display, and sound an alarm alerting you of the condition. If this condition ever arises, press the **OFF** button and call for qualified Product Support Personnel.

WARNING

If a problem occurs and relocation of heated items is necessary, allow sufficient time (a minimum of two hours) for the internal temperature of the items to drop to a level which would enable removal without causing possible damage to the items, or resulting in injury to personnel.

1. Wait at least two hours before opening the door to ensure that the unit has had sufficient time to cool.
2. Use extreme care when removing glassware and solutions; items in the cabinet at the time of the overheat condition may be extremely hot!
3. It is possible for a secondary overheat condition to occur in which the main AC circuit breaker will be shut off automatically. Under these conditions the display panel will be turned off and cannot be turned back on by pressing the green "ON" button. If this condition arises, contact a fully authorized MDT Product Support Representative to address the problem and reset the unit.

SHELF ADJUSTMENT

You may change the height of the three lower compartments by adjusting the height of either of the two shelves.

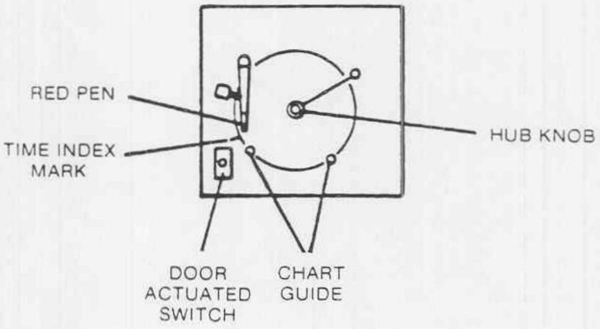
WARNING

To prevent burns to the skin when adjusting shelf height, either allow sufficient time (at least two hours) for the shelves to cool before handling them, or wear protective gloves when handling hot shelves.

1. Lift the shelf off the four bracket clips attached to the four shelf pilasters; remove the shelf from the cabinet chamber.
2. Remove the clips from the shelf pilasters by squeezing the flanges of the bracket clips while tilting the clips upward.
3. Reassemble the bracket clips to new positions on the shelf pilasters and place the shelf back on the clips. Ensure that the rolled edge of the shelf is toward the front of the cabinet.

RECORDER CHART REPLACEMENT

1. Open the recorder door. The pen arm will automatically lift off the chart and move to its holding ramp.
2. Unscrew the hub knob.
3. Remove the used chart.
4. Place the new chart over the hub and slip the chart edges under the two guides.
5. Align the correct daily time line on the chart with the time index mark on the recorder.
6. Replace the hub knob and tighten it securely.
7. Shut the recorder door. The pen arm will automatically move from its holding ramp back to the chart.



PREVENTIVE MAINTENANCE

WEEKLY

Door Gasket

Clean the door gasket with a mild cleaning agent. Inspect the door gasket for damage that might prevent a good sealing surface.

WHEN REQUIRED

Control Head Assembly

Wipe the control head assembly with a soft, dry cloth.

External And Internal Surfaces

Wash all exterior and interior surfaces of the warming cabinet (**except** for the control head assembly) with a mild cleaning agent.

Filter

Replace the filter as needed. Follow the instructions for removing the filter.

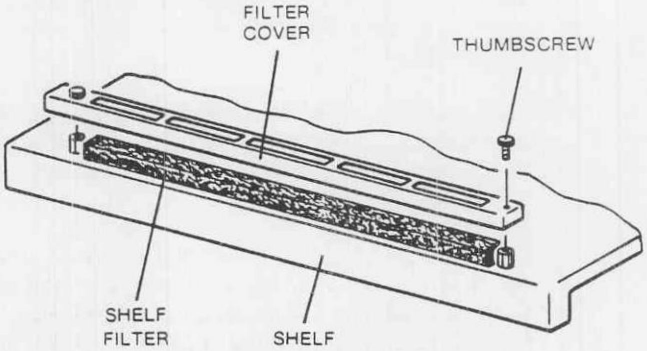
WARNING The filter surroundings may be hot. Avoid possible burns to skin by allowing the cabinet to cool a minimum of two hours before removing the filter.

NOTE To prevent the circulation of unfiltered air through the unit, MDT recommends that you do not operate the warming cabinet without the filter in place.

1. Rotate the thumbscrews holding the filter in place.
2. Remove the filter cover.

CAUTION A clogged filter restricts proper circulation of air inside the warming cabinet.

3. Inspect the filter. If the filter is clogged, replace it with a new filter.
4. Replace the filter and secure the cover in place with the thumbscrews.
5. Resume normal operation.



REPLACING FILTER

SPARE PARTS

To ensure that parts are immediately available when needed, maintain a stock of the parts listed below. Parts with a prefix "+" are required for routine maintenance.

	Part No.	Part Description	Recommended Quantity
	69089	Relay, solid state (2-1/2 amp)	1
	518404	Relay, solid state (45 amp)	1
	69094	Fan, 120V, 50/60 Hz, 127 CFM	2
or	69095	Fan, 230V, 50/60 Hz, 127 CFM	2
	69058	Door Gasket, Model 5540	1
	69037	Door Gasket, Models 5545 & 5550	1
	69216	Shelf Gasket, Models 5545 & 5550	1
	69195	Filter, clean air	1
	518407	Temperature probe assembly	1
	69107	Thermostat, auto reset, NO	1
	530482	Temp. Recording Charts, 24 hr (°C/°F)	1 box of 100

QUALITY SERVICE — RELIABLE PERFORMANCE

MDT recommends preventive maintenance performed by factory trained Product Support Representatives, using authorized parts and service techniques. Recognizing symptoms of potential trouble and making corrections immediately is less costly and less time consuming than repairing damaged equipment. Our performance assurance plan offers scientific maintenance, not merely repair service.

For quality service on this equipment and information on our performance assurance plan, contact your nearest MDT Biologic Company District Service Office; write to MDT Biologic Company, 1777 East Henrietta Road, Rochester, New York 14692; or telephone area code 716/475-1400.

To ensure that parts are immediately available when needed, maintain a stock of the spare parts.

A Service Manual and a Parts Catalog for this unit may be purchased from MDT Biologic Company.

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INSTALLATION INSTRUCTIONS

Castle®

5540
5545
5550

WARMING CABINETS

MDT Biologic Company
1777 East Henrietta Road
P.O. Box 23077
Rochester, New York 14692, U.S.A.

Technology for Life

350263

INSTALLATION INSTRUCTIONS 350263 (3/2/90)

Related Publications:

Operator Manual	**350264**
Service Manual	**350265**
Parts Catalog	**350266**

DESCRIPTION OF SYMBOLS & NOTES IN MANUAL

The following symbols are related notes that appear in this manual.

DANGER	"Danger" notes alert the user to the possibility of serious personal injury which could be fatal.
WARNING	"Warning" notes alert the user to the possibility of personal injury.
CAUTION	"Caution" notes alert the user to the possibility of damage to the equipment.
NOTE ▶	"Notes" alert the user to pertinent facts and conditions.

CAUTION

Do not operate the warming cabinet until an MDT Product Support Representative makes the required mechanical adjustments and electrical performance tests.

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TECHNICAL DATA

Model 5540

Dimensions:

Uncrated	2'6" W x 2'9" H x 2' D (762 W x 889 H x 610 D mm)
Weight:	180 lbs. (82 kgs.)
Heat Source:	Electric
Load Capacity:	20 two-liter flasks

Models 5545 & 5550

Dimensions:

Uncrated	2'6" W x 6'2" H x 2' D (762 W x 1880 H x 610 D mm)
Weight:	285 lbs. (192 kgs.)
Heat Source:	Electric
Load Capacity:	80 two-liter flasks

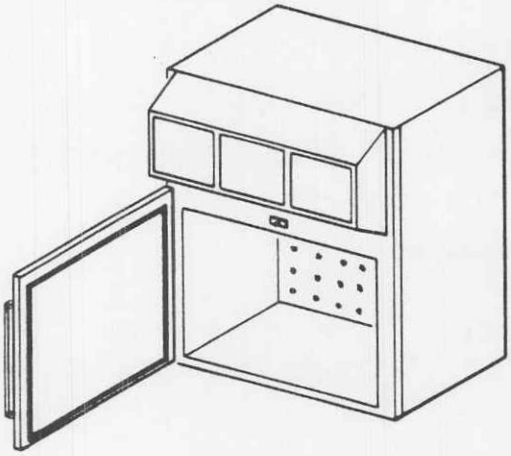
Electrical Supply: 115V, 50/60 Hz, 10 Amp, Single Phase or
230V, 50/60 Hz., 5 Amp, Single Phase

ELECTRICAL REQUIREMENTS (By Customer)

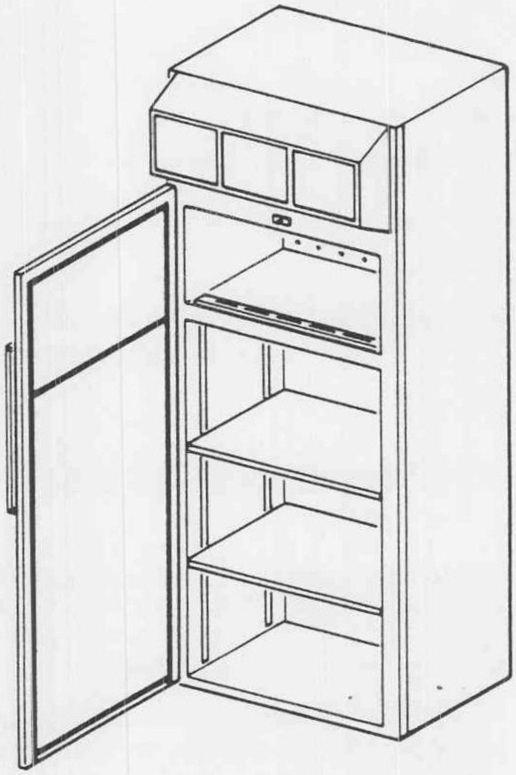
1. Depending upon the voltage rating of the unit, either a 115V, 50/60 Hz, 10 Amp, Single Phase, or a 230V, 50/60 Hz, 5 Amp, Single Phase electric supply is required.
2. A fused disconnect switch is required in the electrical supply line convenient to the warming cabinet.
3. A 1/2" diameter electrical supply line conduit is required for connection to the electrical service junction box on top of the unit. A 7/8" diameter hole is provided in the top panel for routing the conduit to the junction box.
4. Sufficient space above the warming cabinet is required for access to the electrical service junction box.

PERTINENT DATA

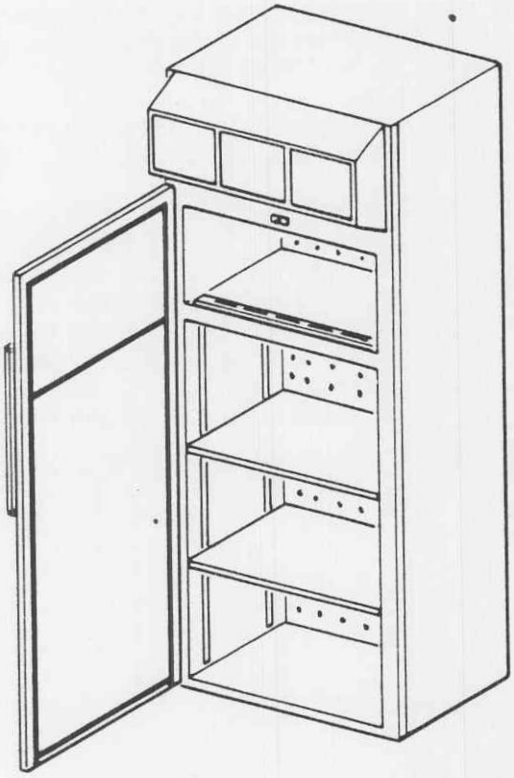
1. If installing the unit in a recessed area, the temperature of the recessed area must not exceed 38°C (100°F).
2. The support structure you provide for **Model 5540** must support 330 lbs. (150 kg.) minimum.
3. **Models 5545 and 5550** - Using 1/4-20 lag fasteners, or lag fasteners sufficient to comply with seismic anchoring requirements, anchor the warming cabinet to the floor through two 9/32" diameter holes in the base of each side panel. See Appendices C and D for seismic anchoring drawings. Minimum length of lag fasteners should be 2" (50mm).



MODEL 5540



MODEL 5545



MODEL 5550

SAVE FOR FUTURE REFERENCE

This document contains useful information for assembing the warming cabinet and should be retained at the warming cabinet site.

DANGER

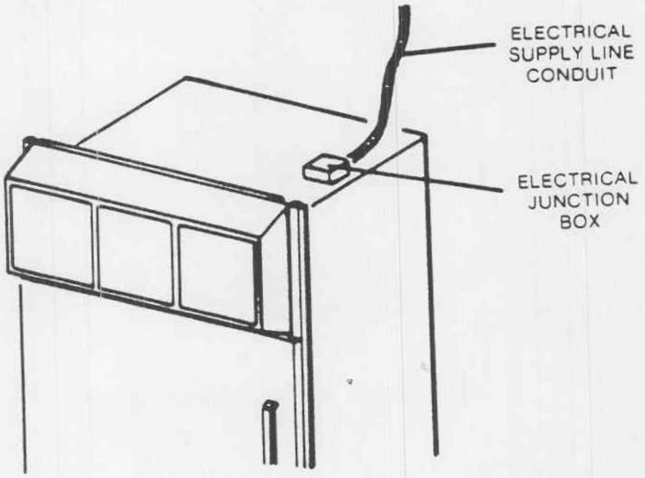
Do not install this unit in any area where flammable agents are introduced into the atmosphere, or may be introduced into the atmosphere. This unit contains electrical components designed to heat and circulate air from the surrounding atmosphere. Contact with an airborne flammable agent may cause explosion or fire, resulting in serious personal injury or damage to equipment and surroundings.

UNCRATING

CAUTION

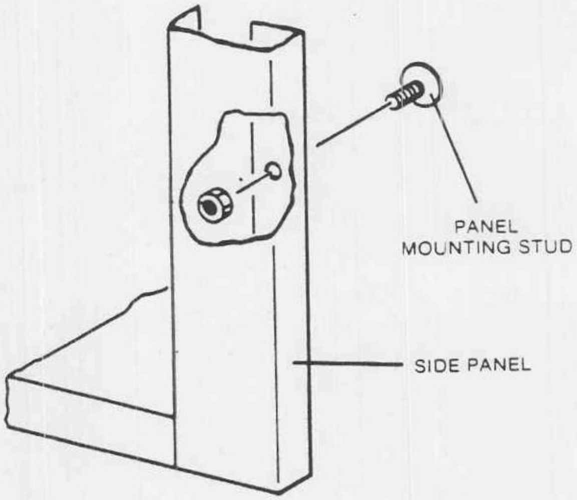
To prevent distortion of the warming cabinet, keep the door closed while uncrating the unit, and at all times while moving it.

1. Move the warming cabinet to the desired location.
2. Uncrate the warming cabinet and check the shipping bill to ensure that you received all parts.
3. Check the warming cabinet's voltage rating to ensure that it matches the intended electrical supply. The voltage rating appears on the cover of the electrical service junction box attached to the top panel. Refer to the illustration.



ELECTRICAL SERVICE JUNCTION BOX

4. If installing the warming cabinet in a recessed area, remove and discard all the panel mounting studs attached to the side panels. Refer to the illustration.



PANEL MOUNTING STUDS

MODEL 5540 RECESSED:

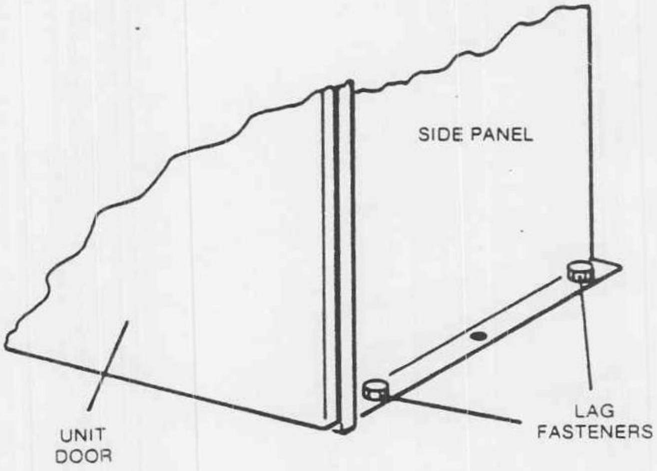
POSITIONING, LEVELING, AND ANCHORING

Refer to the Roughing-In Drawing In Appendix A.

NOTE ▶ For seismic anchoring requirements (per California Administrative Code), refer to Appendix C.

NOTE ▶ The support structure you provide must be level, plumb, and capable of supporting 330 lbs. (150 kg.) minimum.

1. Carefully slide the warming cabinet through the wall opening.
2. Level the warming cabinet by placing a level on the floor of the unit and shimming under the side panels as required.
3. Anchor the warming cabinet to the support structure by inserting two lag fasteners through the 9/32" diameter holes in the base of each side panel. Refer to the illustration.



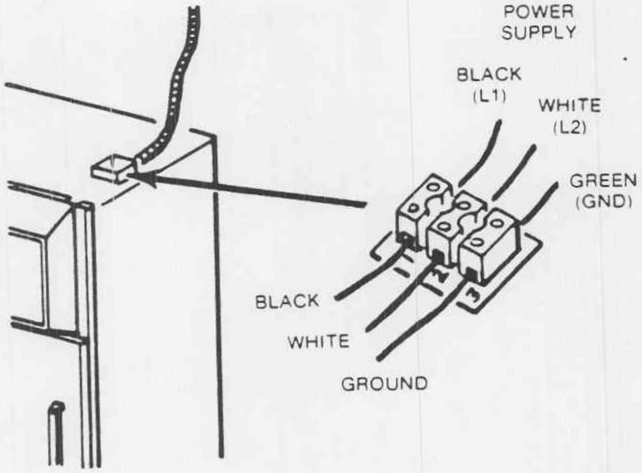
ANCHORING THE WARMING CABINET

ELECTRICAL CONNECTION

NOTE ▶ The installer is responsible for compliance with all prevailing electrical codes.

The customer must provide a fused disconnect switch in the electrical supply line at the warming cabinet site.

1. Check the warming cabinet's voltage rating to ensure that it matches the intended electrical supply. The voltage rating appears on the cover of the electrical service junction box attached to the top panel.
2. Remove the four self-tapping screws securing the electrical service junction box in place, and remove the junction box.
3. Route the 1/2" diameter electrical supply conduit through the 7/8" diameter junction box access hole in the top panel.
4. Referring to the illustration, connect the electrical supply circuit to terminals 1 and 2 (Neutral) located in the junction box. Connect the ground to terminal 3.



ELECTRICAL CONNECTIONS

5. Re-assemble the cover to the electrical service junction box.

Installation is now complete for a recessed Model 5540 Warming Cabinet.

However, before operating the warming cabinet, contact an MDT Product Support Representative to perform the required mechanical adjustments and electrical tests.

CAUTION Operation of this unit before having a fully authorized MDT Product Support Representative inspect and test the unit voids the warranty.

POSITIONING, LEVELING, AND ANCHORING

Refer to the Roughing-In Drawing In Appendix A.

NOTES
▼

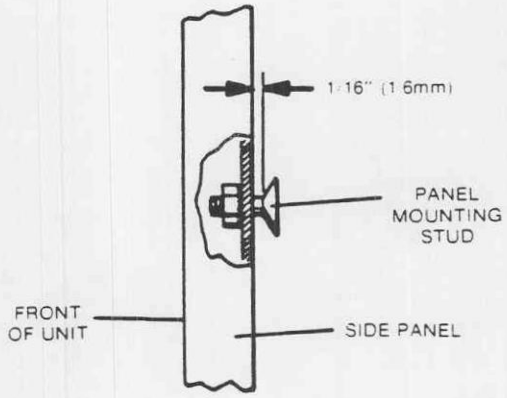
MODEL 5540 CABINET:

For seismic anchoring requirements (per California Administrative Code), refer to Appendix C.

The support structure you provide must be level, plumb, and capable of supporting 330 lbs. (150 kg.) minimum.

You will partially assemble the warming cabinet before locating it in its final position.

1. Unpack the exterior cabinet package.
2. Locate the three panel mounting studs attached to each side panel of the warming cabinet. Adjust the studs, if required, so there is a minimum clearance of 1/16" (1.6 mm) between the surface of the panel and the inside of the mounting stud head.



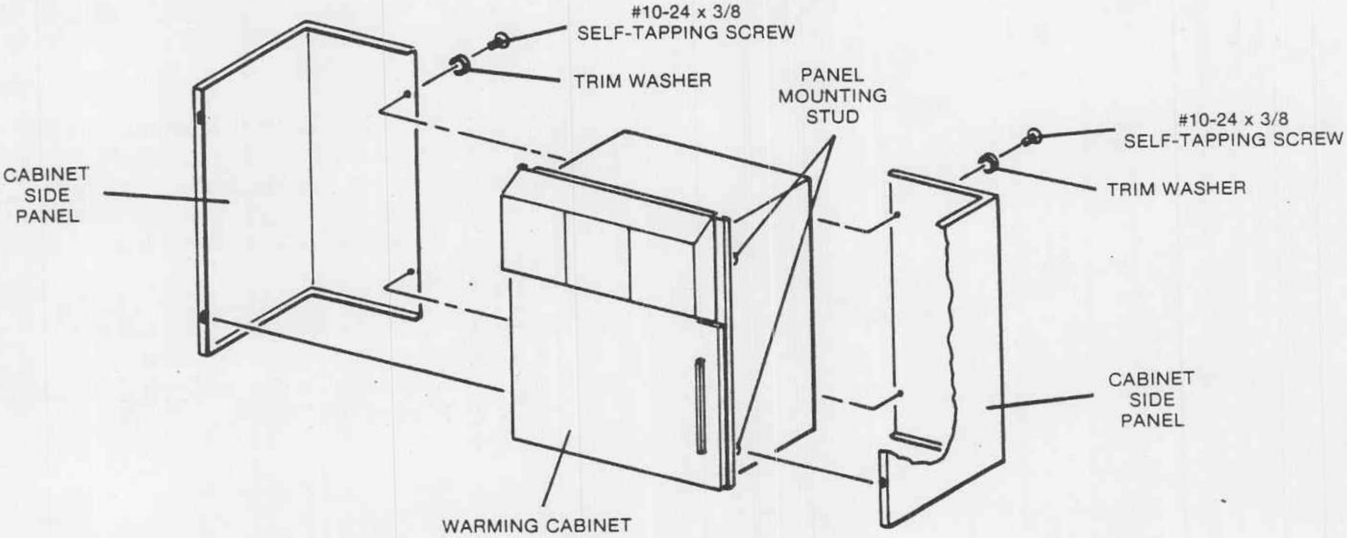
ADJUSTING THE STUDS

NOTE The cabinet side panels are identical, so you may assemble either one to the right or left side of the warming cabinet.

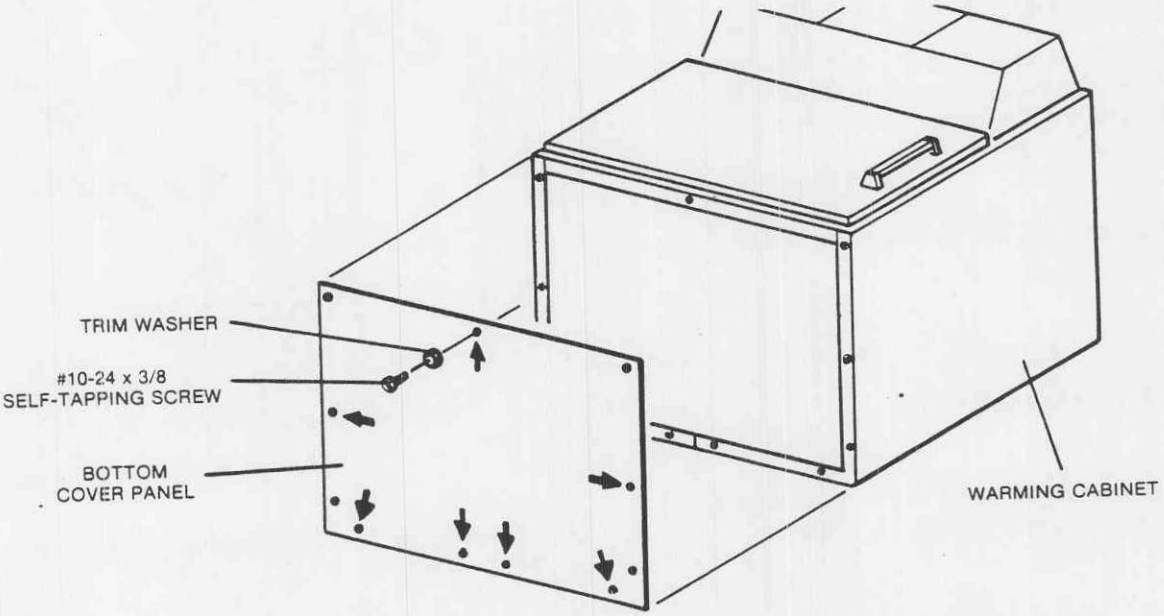
3. Assemble the cabinet side panels to the panel mounting studs. Using the four #10-24 x 3/8" long self-tapping screws and four trim washers provided, fasten the side panels to the mounting brackets located on the back of the warming cabinet. Refer to the illustration.

4. Carefully tip the warming cabinet onto its back to assemble the bottom cover panel and the four feet.

5. Assemble the bottom cover panel to the warming cabinet using the seven #10-24 x 3/8" long self tapping screws and seven trim washers provided. Refer to the illustration for the location of the designated holes for the fastener assembly.

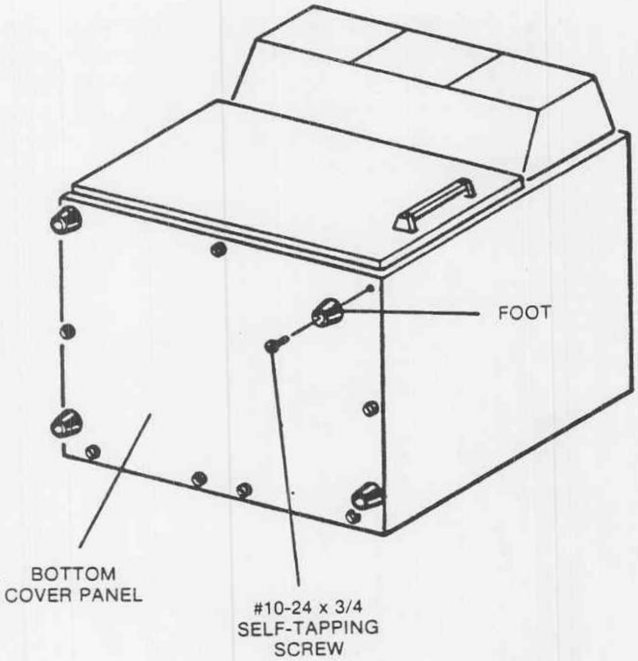

#10-24 x 3/8
SELF-TAPPING SCREW
TRIM WASHER
PANEL
MOUNTING
STUD
#10-24 x 3/8
SELF-TAPPING SCREW
TRIM WASHER
CABINET
SIDE
PANEL
CABINET
SIDE
PANEL
WARMING CABINET

ASSEMBLING THE SIDE PANELS


TRIM WASHER
#10-24 x 3/8
SELF-TAPPING SCREW
BOTTOM
COVER PANEL
WARMING CABINET

ASSEMBLING BOTTOM PANEL ON CABINET

6. Using the four #10-24 x 3/4" long self-tapping screws provided, assemble the four feet to the remaining holes in the bottom cover panel. Refer to the illustration.



ASSEMBLING FEET TO THE BOTTOM PANEL

7. Carefully raise the warming cabinet to its upright, operating position.

NOTE ▶ Do not assemble the cabinet top cover at this time. Assemble the top cover only after making all electrical connections.

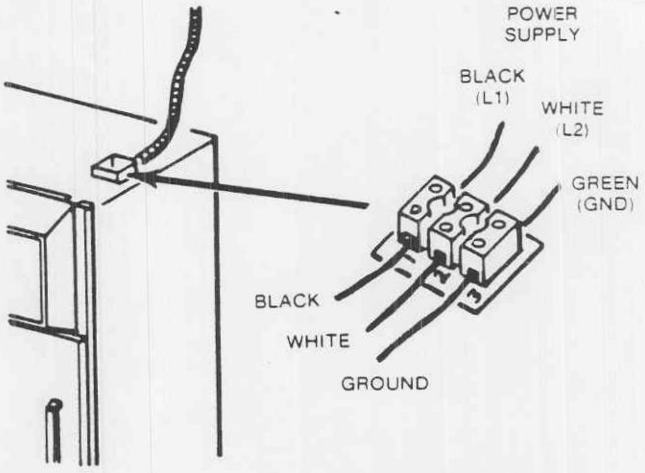
8. Move the warming cabinet onto the support structure.

ELECTRICAL CONNECTION

The customer must provide a fused disconnect switch in the electrical supply line at the warming cabinet site.

NOTE ▶ The installer is responsible for compliance with all prevailing electrical codes.

1. Check the warming cabinet's voltage rating to ensure that it matches the intended electrical supply. The voltage rating appears on the cover of the electrical service junction box attached to the top panel.
2. Remove the four self-tapping screws securing the electrical service junction box in place, and remove the junction box.
3. Route the 1/2" diameter electrical supply conduit through the 7/8" diameter junction box access hole in the top panel. Be sure to allow sufficient conduit length to route it through the 1" cutout in the back edge of the cabinet's top panel.
4. Referring to the illustration, connect the electrical supply circuit to terminals 1 and 2 (Neutral) located in the junction box. Connect the ground to terminal 3.



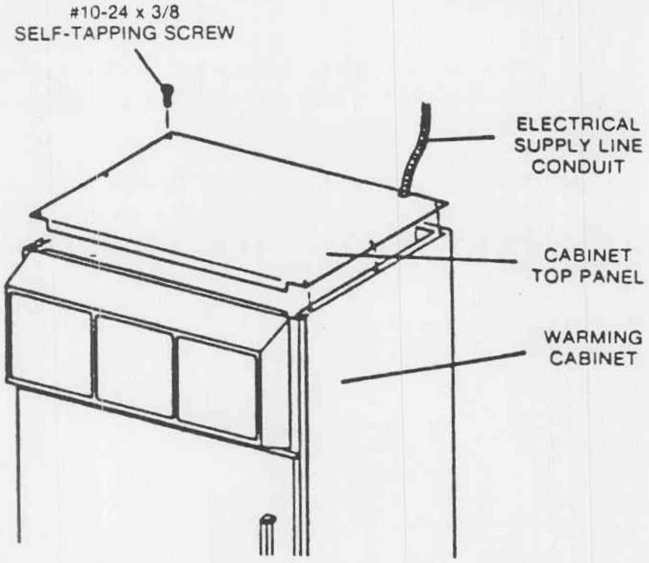
ELECTRICAL CONNECTIONS

5. Re-assemble the cover to the electrical service junction box.

CABINET ASSEMBLY

In order to move the warming cabinet to its support structure (as instructed in section "POSITIONING, LEVELING, AND ANCHORING"), you assembled all but the cabinet's top panel. So, to complete the unit's installation, all that remains is the installation of this top panel.

Using the six #10-24 x 3/8" long self-tapping screws, assemble the top panel to the cabinet side panels. Referring to the illustration, route the electrical supply conduit through the 1" cutout on the back edge of the top panel.



ROUTING THE ELECTRICAL SUPPLY CONDUIT

Installation is now complete for a cabinet Model 5540 Warming Cabinet.

However, before operating the warming cabinet, contact an MDT Product Support Representative to perform the required mechanical adjustments and electrical tests.

CAUTION

Operation of this unit before having a fully authorized MDT Product Support Representative inspect and test the unit voids the warranty.

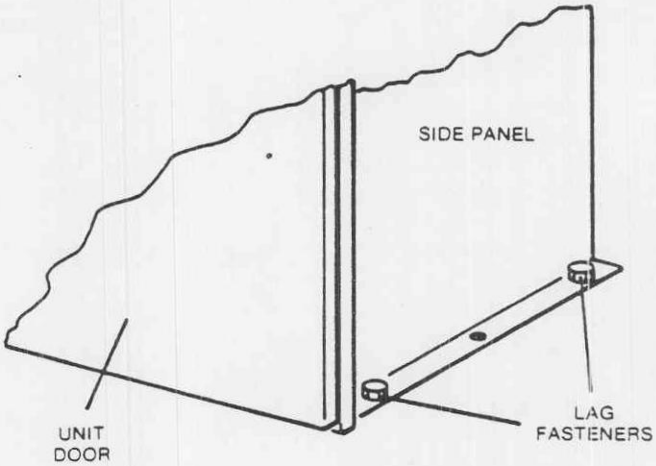
MODELS 5545 & 5550 RECESSED:

POSITIONING, LEVELING, AND ANCHORING

Refer to the Roughing-In Drawing In Appendix B.

NOTE ▶ For seismic anchoring requirements (per California Administrative Code), refer to Appendix D.

1. Move the warming cabinet to its final installation position. Carefully slide it through the wall opening.
2. Level the warming cabinet by placing a level on the floor of the unit and shimming under the side panels as required.
3. Anchor the warming cabinet to the floor by inserting the two lag fasteners through the 9/32" diameter holes in the base of each side panel. Refer to the illustration.



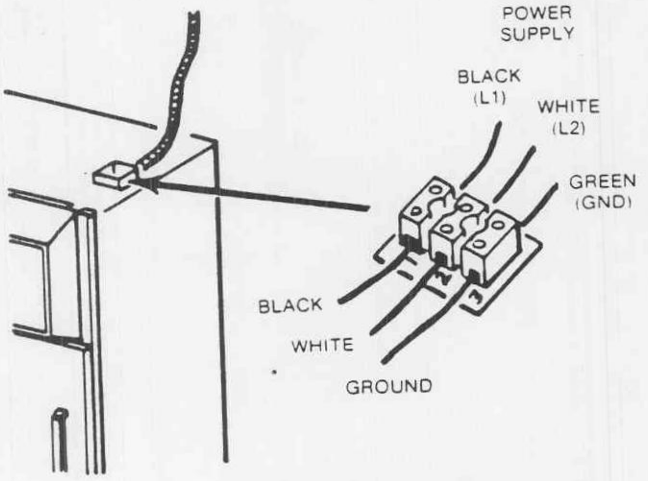
ANCHORING THE WARMING CABINET

ELECTRICAL CONNECTION

NOTE The installer is responsible for compliance with all prevailing electrical codes.

The customer must provide a fused disconnect switch in the electrical supply line at the warming cabinet site.

1. Check the warming cabinet's voltage rating to ensure that it matches the intended electrical supply. The voltage rating appears on the cover of the electrical service junction box attached to the top panel.
2. Remove the four self-tapping screws securing the electrical service junction box in place, and remove the junction box.
3. Route the 1/2" diameter electrical supply conduit through the 7/8" diameter junction box access hole in the top panel.
4. Referring to the illustration, connect the electrical supply circuit to terminals 1 and 2 (Neutral) located in the junction box. Connect the ground to terminal 3.



ELECTRICAL CONNECTIONS

5. Re-assemble the cover to the electrical service junction box.

Installation is now complete for a recessed Model 5545 or 5550 Warming Cabinet.

However, before operating the warming cabinet, contact an MDT Product Support Representative to perform the required mechanical adjustments and electrical tests.

CAUTIONS Operation of this unit before having a fully authorized MDT Product Support Representative inspect and test the unit voids the warranty.

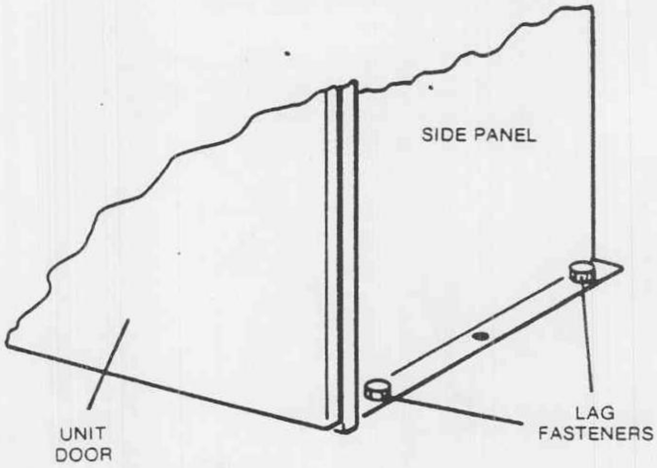
MODELS 5545 & 5550 CABINET:

POSITIONING, LEVELING, AND ANCHORING

Refer to the Roughing-In Drawing In Appendix B.

NOTE ▶ For seismic anchoring requirements (per California Administrative Code), refer to Appendix D.

1. Move the warming cabinet to its final installation position.
2. Level the warming cabinet by placing a level on the floor of the unit and shimming under the side panels as required.
3. Anchor the warming cabinet to the floor by inserting the two lag fasteners through the 9/32" diameter holes in the base of each side panel. Refer to the illustration.



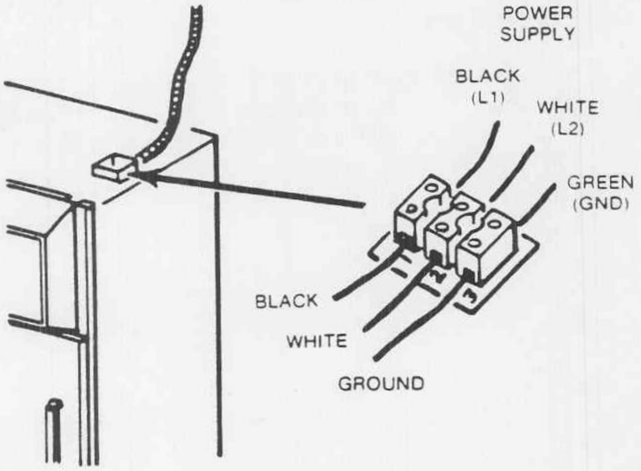
ANCHORING THE WARMING CABINET

ELECTRICAL CONNECTION

NOTE ▶ The installer is responsible for compliance with all prevailing electrical codes.

The customer must provide a fused disconnect switch in the electrical supply line at the warming cabinet site.

1. Check the warming cabinet's voltage rating to ensure that it matches the intended electrical supply. The voltage rating appears on the cover of the electrical service junction box attached to the top panel.
2. Remove the four self-tapping screws securing the electrical service junction box in place, and remove the junction box.
3. Route the 1/2" diameter electrical supply conduit through the 7/8" diameter junction box access hole in the top panel. Be sure to allow sufficient conduit length to route it through the 1" cutout in the back edge of the cabinet's top panel.
4. Referring to the illustration, connect the electrical supply circuit to terminals 1 and 2 (Neutral) located in the junction box. Connect the ground to terminal 3.

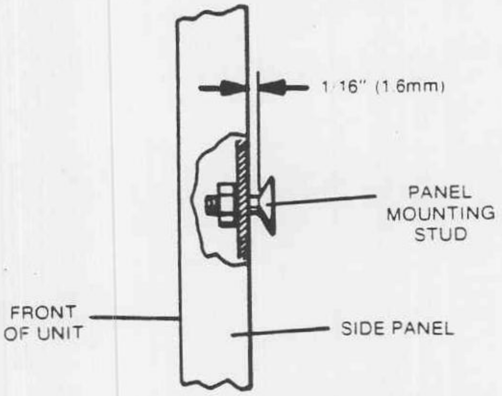


ELECTRICAL CONNECTIONS

5. Re-assemble the cover to the electrical service junction box.

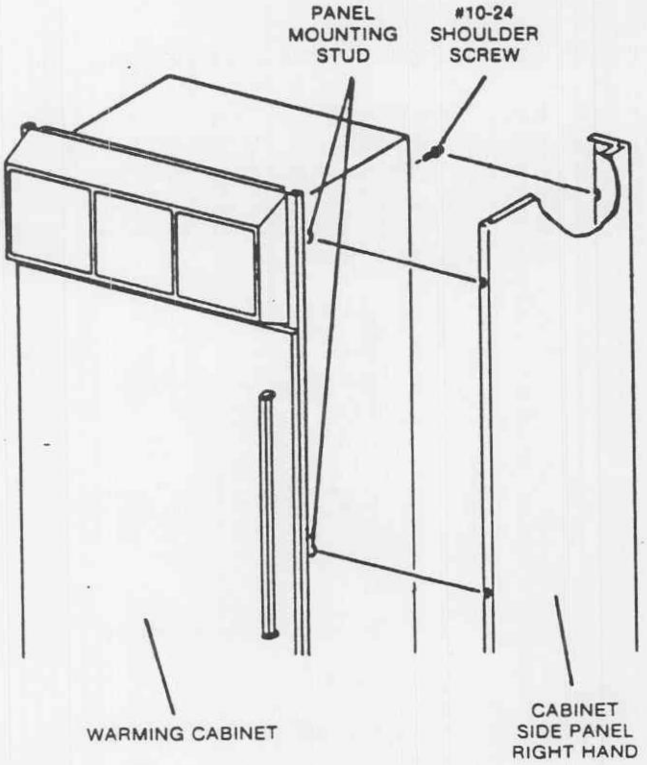
CABINET ASSEMBLY

1. Unpack the exterior cabinet package.
2. Locate the three panel mounting studs attached to each side panel of the warming cabinet. Adjust the studs, if required, so there is a minimum clearance of 1/16" (1.6 mm) between the surface of the panel and the inside of the mounting stud head.



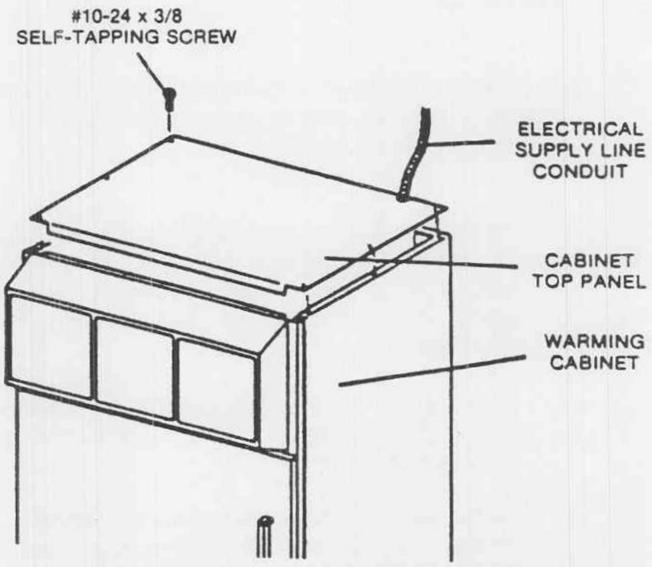
ADJUSTING THE STUDS

3. Assemble the six #10-24 shoulder screws to the mounting brackets attached to the rear panel of the warming cabinet.
4. Assemble the warming cabinet side panels to the panel mounting studs and onto the heads of the shoulder screws.


PANEL MOUNTING STUD
#10-24 SHOULDER SCREW
WARMING CABINET
CABINET SIDE PANEL RIGHT HAND

ASSEMBLING THE SIDE PANELS

5. Using the six #10-24 x 3/8" long self-tapping screws, assemble the cabinet top panel to the side panels. Referring to the illustration, route the electrical supply conduit through the 1" cutout at the back edge of the top panel.


#10-24 x 3/8 SELF-TAPPING SCREW
ELECTRICAL SUPPLY LINE CONDUIT
CABINET TOP PANEL
WARMING CABINET

ROUTING THE ELECTRICAL SUPPLY CONDUIT

Installation is now complete for a cabinet Model 5545 or 5550 Warming Cabinet.

However, before operating the warming cabinet, contact an MDT Product Support Representative to perform the required mechanical adjustments and electrical tests.

CAUTION

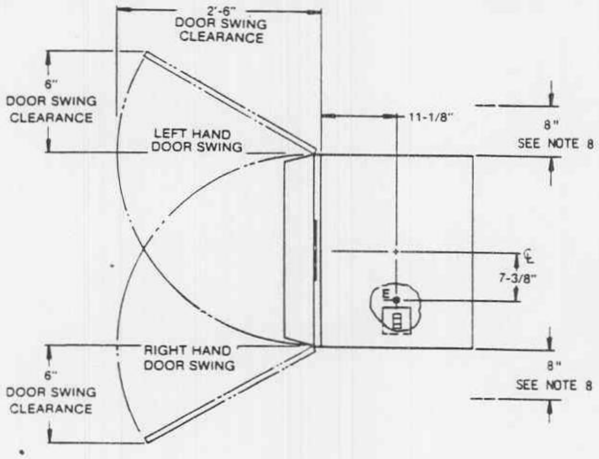
Operation of this unit before having a fully authorized MDT Product Support Representative inspect and test the unit voids the warranty.

APPENDICES

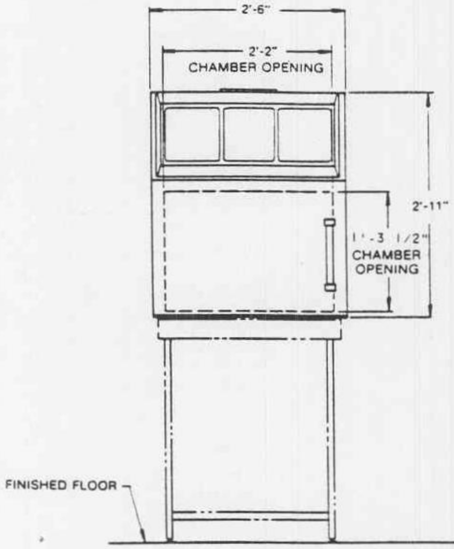
Appendix A: Model 5540 Roughing-In Drawing
Appendix B: Models 5545 & 5550 Roughing-In Drawing
Appendix C: Model 5540 Equipment Anchoring - Seismic Forces
Appendix D: Models 5545 & 5550 Equipment Anchoring - Seismic Forces

APPENDIX A: Model 5540
Roughing-In Drawing

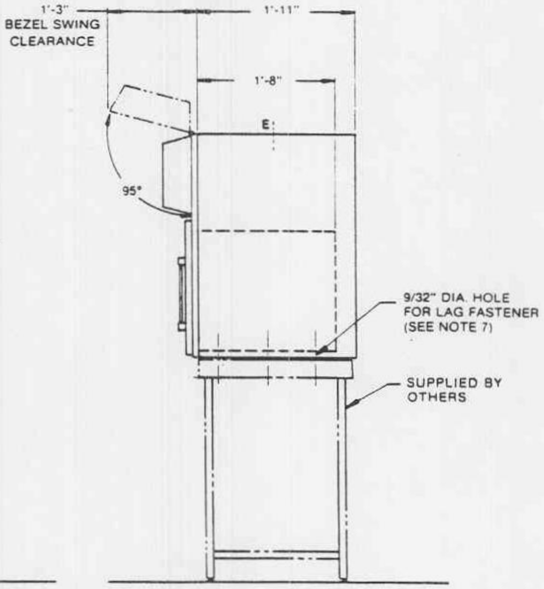
For greater detail, refer to Drawing #HS5019.


2'-6"
DOOR SWING
CLEARANCE
6"
DOOR SWING
CLEARANCE
LEFT HAND
DOOR SWING
11-1/8"
8"
SEE NOTE 8
℄
7-3/8"
E
RIGHT HAND
DOOR SWING
6"
DOOR SWING
CLEARANCE
8"
SEE NOTE 8

VIEW: PLAN


2'-6"
2'-2"
CHAMBER OPENING
2'-11"
1'-3 1/2"
CHAMBER
OPENING
FINISHED FLOOR

VIEW: FRONT
FREE-STANDING
(CABINET)


1'-3"
BEZEL SWING
CLEARANCE
1'-11"
1'-8"
E
95°
9/32" DIA. HOLE
FOR LAG FASTENER
(SEE NOTE 7)
SUPPLIED BY
OTHERS

VIEW: SIDE

NOTICE: WORK BY OTHERS

SAFE AND EFFICIENT OPERATION OF THIS PRODUCT IS DEPENDENT UPON THE OWNER/USER OR HIS CONTRACTORS PROVIDING THE SERVICES SPECIFIED HEREIN AS WELL AS ANY OTHER NORMALLY ACCEPTED ELECTRICAL, MECHANICAL OR PLUMBING INTERFACE BETWEEN USER'S SUPPLY AND THIS PRODUCT. MDT WILL NOT ASSUME RESPONSIBILITY FOR PROBLEMS THAT RESULT FROM NON-COMPLIANCE WITH THESE CONDITIONS. THE FOLLOWING CONDITIONS AND SERVICES ARE REQUIRED BY MDT EQUIPMENT AND ARE TO BE PROVIDED BY OTHERS.

SERVICES

ELECTRICAL SUPPLY

SERVICE	UTILITY	UNIT BREAKER RATING	CONSUMPTION
E = 7/8" DIA. HOLE FOR 1/2" DIA. CONDUIT CONNECTION	☐ 120V, 50/60Hz, 1PH ☐ 230V 50/60Hz, 1PH	10 AMP 5 AMP	380 W-H AT 71° C

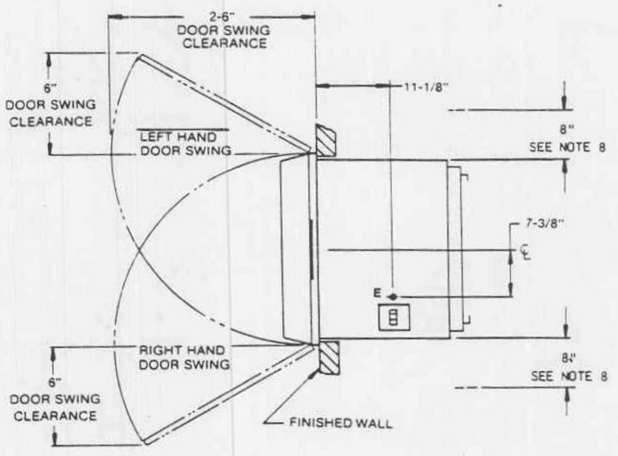
UNIT WEIGHT

MODEL	CRATED	UNCRATED	DIM.CRATED
RECESSED	225 lbs	180 lbs	35-1/2" x 33-1/2" x 39"
OPTIONAL CABINET FOR RECESSED UNIT (SHIPPED SEPARATELY)	71 lbs	56 lbs	26" x 17" x 39"

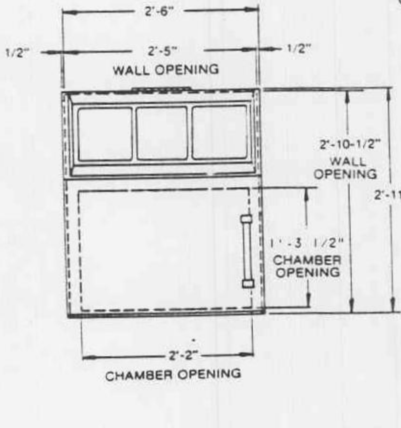
NOTES

NOTICE TO ARCHITECTS AND CONTRACTORS

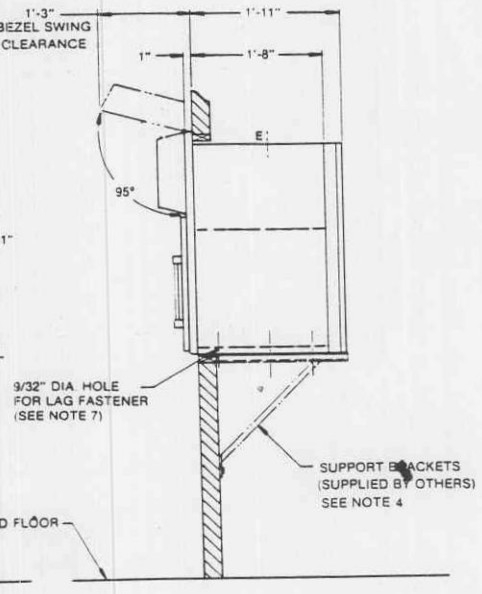
1. A FUSED DISCONNECT SWITCH IS RECOMMENDED CONVENIENT TO CABINET FOR ELECTRICAL SUPPLY (BY CUSTOMER).
2. DOOR MAY BE HINGED RIGHT OR LEFT SIDE. DOORS MAY BE REVERSED **IF DESIRED.BY CASTLE SERVICE PERSONNEL.**
3. HEAT LOSSES: 1300 BTU/HR. RADIATED
4. SUPPORT BRACKETS MUST SUPPORT 268 POUNDS.
5. ACCESS REQUIRED TO ELECTRICAL JUNCTION BOX DURING INSTALLATION.
6. TEMPERATURE IN RECESSING ROOM IS NOT TO EXCEED 90°F.
7. **CABINET AND RECESSED UNITS MUST BE LAGGED TO SUPPORT STRUCTURE.BY THE CUSTOMER.THREE 9/32" DIA. HOLES ARE PROVIDED ON EACH SIDE OF THE UNIT.**
8. 8" CLEARANCE MUST BE PROVIDED FOR WRENCH SWING WHEN LAGGING UNIT AS SPECIFIED IN NOTE 7


2-6"
DOOR SWING
CLEARANCE
6"
DOOR SWING
CLEARANCE
LEFT HAND
DOOR SWING
11-1/8"
8"
SEE NOTE 8
7-3/8"
℄
E
RIGHT HAND
DOOR SWING
6"
DOOR SWING
CLEARANCE
8"
SEE NOTE 8
FINISHED WALL

VIEW: PLAN


2'-6"
1/2"
2'-5"
1/2"
WALL OPENING
2'-10-1/2"
WALL
OPENING
2'-11"
1'-3 1/2"
CHAMBER
OPENING
2'-2"
CHAMBER OPENING

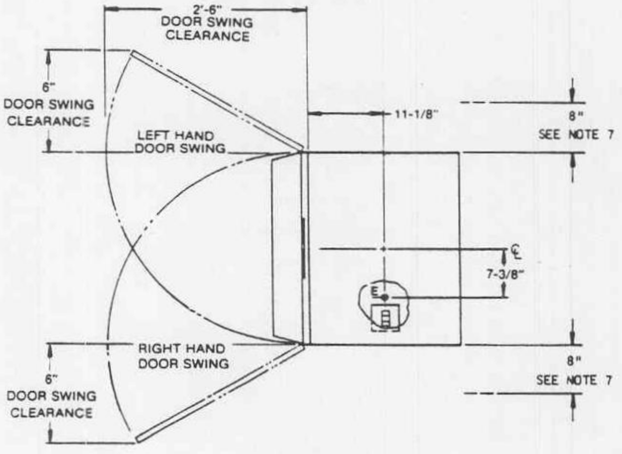
VIEW: FRONT
(RECESSED)


1'-3"
BEZEL SWING
CLEARANCE
1'-11"
1"
1'-8"
E
95°
9/32" DIA. HOLE
FOR LAG FASTENER
(SEE NOTE 7)
SUPPORT BRACKETS
(SUPPLIED BY OTHERS)
SEE NOTE 4
FINISHED FLOOR

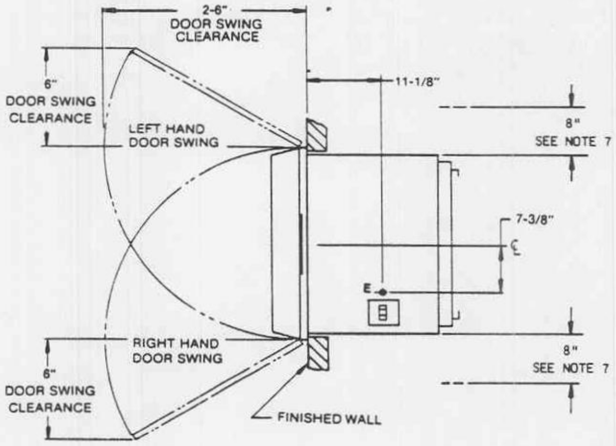
VIEW: SIDE

APPENDIX B: Models 5545 & 5550
Roughing-In Drawing

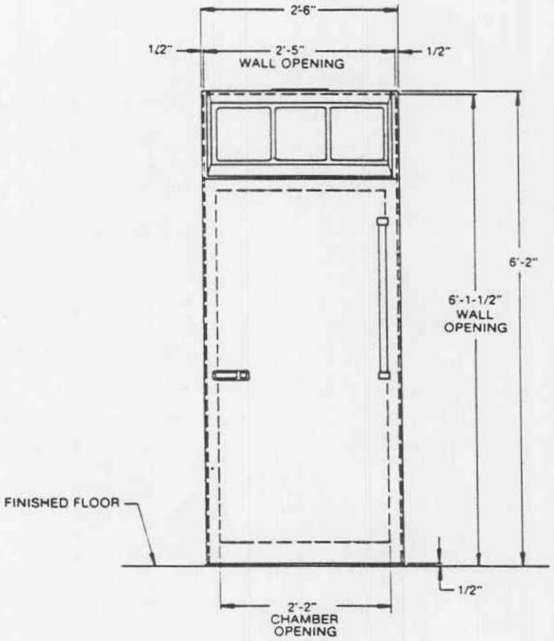
For greater detail, refer to Drawing #HS5018.


2'-6"
DOOR SWING
CLEARANCE
6"
DOOR SWING
CLEARANCE
LEFT HAND
DOOR SWING
11-1/8"
8"
SEE NOTE 7
℄
7-3/8"
E
RIGHT HAND
DOOR SWING
6"
DOOR SWING
CLEARANCE
8"
SEE NOTE 7

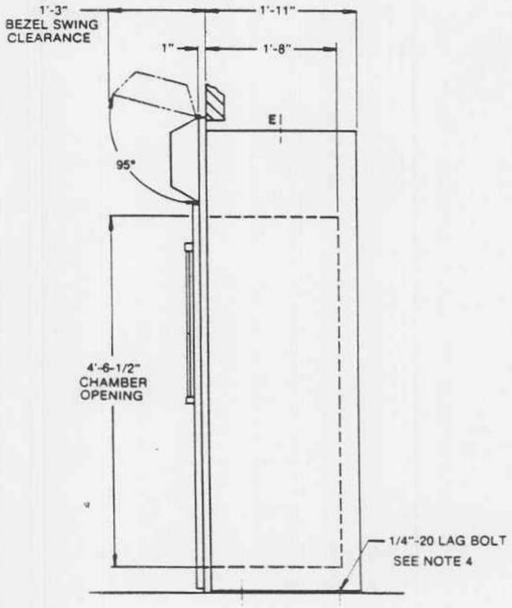
VIEW: PLAN
(CABINET)


2-6"
DOOR SWING
CLEARANCE
11-1/8"
6"
DOOR SWING
CLEARANCE
LEFT HAND
DOOR SWING
8"
SEE NOTE 7
7-3/8"
℄
E
RIGHT HAND
DOOR SWING
6"
DOOR SWING
CLEARANCE
8"
SEE NOTE 7
FINISHED WALL

VIEW: PLAN
(RECESSED)


2'-6"
1/2"
2'-5"
WALL OPENING
1/2"
6'-2"
6'-1-1/2"
WALL
OPENING
FINISHED FLOOR
1/2"
2'-2"
CHAMBER
OPENING

VIEW:FRONT


1'-3"
BEZEL SWING
CLEARANCE
1'-11"
1"
1'-8"
E
95°
4'-6-1/2"
CHAMBER
OPENING
1/4"-20 LAG BOLT
SEE NOTE 4

VIEW: SIDE

NOTICE: WORK BY OTHERS

SAFE AND EFFICIENT OPERATION OF THIS PRODUCT IS DEPENDENT UPON THE OWNER/USER OR HIS CONTRACTORS PROVIDING THE SERVICES SPECIFIED HEREIN AS WELL AS ANY OTHER NORMALLY ACCEPTED ELECTRICAL, MECHANICAL OR PLUMBING INTERFACE BETWEEN USER'S SUPPLY AND THIS PRODUCT. MDT WILL NOT ASSUME RESPONSIBILITY FOR PROBLEMS THAT RESULT FROM NON-COMPLIANCE WITH THESE CONDITIONS. THE FOLLOWING CONDITIONS AND SERVICES ARE REQUIRED BY MDT EQUIPMENT AND ARE TO BE PROVIDED BY OTHERS.

SERVICES

ELECTRICAL SUPPLY

SERVICE	UTILITY	UNIT BREAKER RATING	CONSUMPTION
E = 7/8" DIA. HOLE FOR 1/2" DIA. CONDUIT CONNECTION	☐ 120V, 50/60Hz, 1PH ☐ 230V 50/60Hz, 1PH	10 AMP 5 AMP	604 WATT-HOURS AT 71° C

NOTES

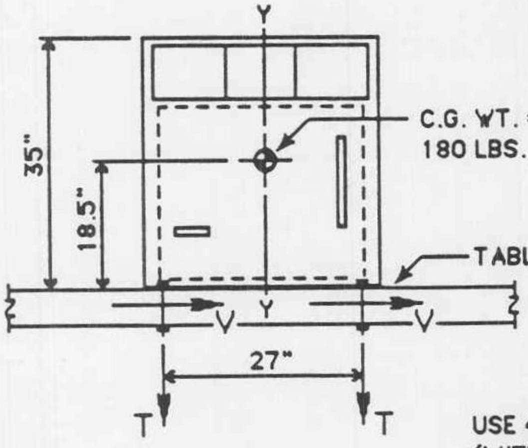
NOTICE TO ARCHITECTS AND CONTRACTORS

1. A FUSED DISCONNECT SWITCH IS RECOMMENDED CONVENIENT TO CABINET FOR ELECTRICAL SUPPLY (BY CUSTOMER).
2. DOOR MAY BE HINGED RIGHT OR LEFT SIDE. DOORS MAY BE REVERSED IF DESIRED BY CASTLE SERVICE PERSONNEL.
3. HEAT LOSSES: 1850 BTU/HR. RADIATED
4. CABINET AND RECESSED UNITS MUST BE LAGGED TO THE FLOOR, 2 PLACES ON EACH SIDE OF THE UNIT, BY THE CUSTOMER. SEE INSTALLATION INSTRUCTIONS.
5. ACCESS REQUIRED TO ELECTRICAL JUNCTION BOX DURING INSTALLATION.
6. TEMPERATURE IN RECESSING ROOM IS NOT TO EXCEED 90°F.
7. 8" CLEARANCE MUST BE PROVIDED FOR WRENCH SWING WHEN LAGGING UNIT AS SPECIFIED IN NOTE 4.

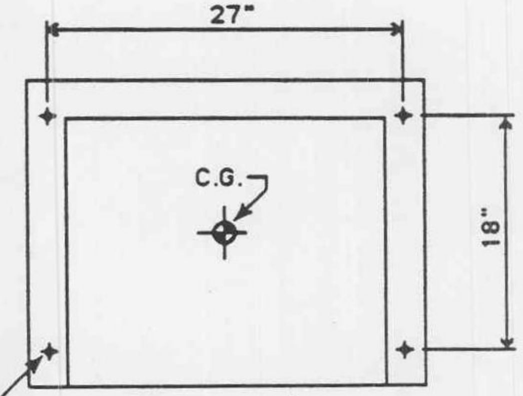
MODEL	UNIT WEIGHT		DIM.CRATED
	CRATED	UNCRATED	
RECESSED	356 lbs	285 lbs	35-1/2" x 33-1/2" x 78"
OPTIONAL CABINET FOR RECESSED UNIT (SHIPPED SEPARATELY)	95 lbs	72 lbs	26" x 8" x 78"

APPENDIX C: Model 5540
Equipment Anchoring — Seismic Forces

For greater detail, refer to Drawing #530487.


Y
35"
18.5"
C.G. WT. =
180 LBS.
TABLE TOP
V
Y
V
27"
T
T

FRONT ELEVATION


27"
C.G.
18"
USE 4-1/4" Ø BOLTS
(WITH DOUBLE NUT)

PLAN AT BASE

T_{MAX} = 81 LBS/BOLT
V_{MAX} = 27 LBS/BOLT

LOADS: PER CALIFORNIA CODE OF REGULATIONS, TITLE 24, TABLE 23P.

WEIGHT (W) = 180 LBS.
HORIZONTAL ACCELERATION (V_H) = 0.45W = 80 LBS
VERTICAL ACCELERATION (V_V) = 0.15W = 27 LBS

BOLT FORCES:

TENSION (T)

$$T = -\frac{180^{\#} - 27^{\#}}{4} + \frac{(81^{\#})(18.5")}{2(18")} = 4 \text{ LBS/BOLT(MAX)}$$

SHEAR (V)

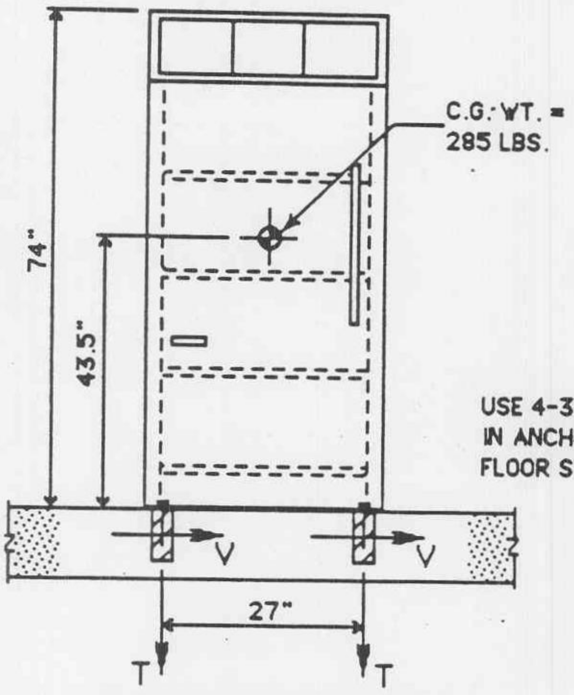
$$V = \frac{81^{\#}}{4} = 23 \text{ LBS/BOLT(MAX)}$$

NOTES:

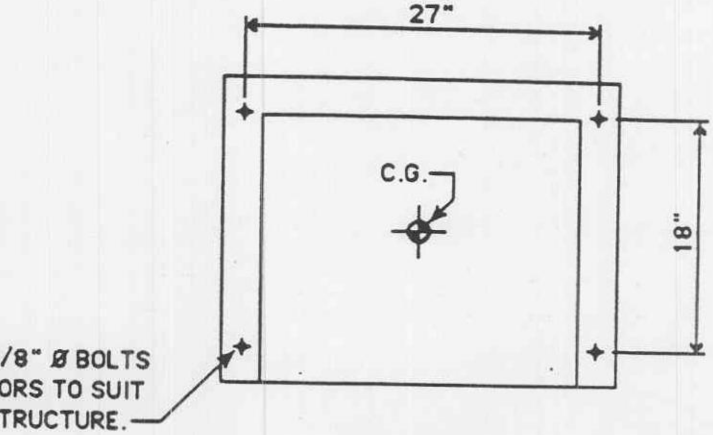
PROVIDE TABLE STRUCTURE DESIGNED TO
SUPPORT WEIGHTS AND FORCES SHOWN.
(BY ENGINEER OF RECORD FOR THE BUILDING).

APPENDIX D: Models 5545 & 5550
Equipment Anchoring — Seismic Forces

For greater detail, refer to Drawing #530488.


74"
43.5"
C.G.-WT. =
285 LBS.
V
V
27"
T
T

FRONT ELEVATION


27"
18"
C.G.
USE 4-3/8" ∅ BOLTS
IN ANCHORS TO SUIT
FLOOR STRUCTURE.

PLAN AT BASE

T_{MAX} = 94 LBS/BOLT
V_{MAX} = 32 LBS/BOLT

LOADS: PER CALIFORNIA CODE OF REGULATIONS, TITLE 24, TABLE 23P.

WEIGHT (W) = 285 LBS.
HORIZONTAL ACCELERATION (V_H) = 0.45W = 128 LBS
VERTICAL ACCELERATION (V_V) = 0.15W = 43 LBS

BOLT FORCES:.

TENSION (T)

$$T = -\frac{285^{\#} - 43^{\#}}{4} + \frac{(128^{\#})(43.5)}{2(18")} = 94 \text{ LBS/BOLT(MAX)}$$

SHEAR (V)

$$V = \frac{128^{\#}}{4} = 32 \text{ LBS/BOLT(MAX)}$$

NOTES:

PROVIDE FLOOR STRUCTURE DESIGNED TO
SUPPORT WEIGHTS AND FORCES SHOWN.
(BY ENGINEER OF RECORD FOR THE BUILDING).

A

ANCHORING 4, 6, 10, 12
APPENDIX A A-2
APPENDIX B A-4
APPENDIX C A-6
APPENDIX D A-7

C

CABINET
  Model 5540 6
  Models 5545 & 5550 12
CABINET ASSEMBLY
  Model 5540 9
  Models 5545 & 5550 13

D

DIMENSIONS 1

E

ELECTRICAL
  Requirements 1
  Supply 1
ELECTRICAL CONNECTION
  Model 5540 Cabinet 8
  Model 5540 Recessed 5
  Models 5545 & 5550 Cabinet 13
  Models 5545 & 5550 Recessed 11

H

HEAT SOURCE 1

L

LOAD CAPACITY . . . 1

M

MODEL 5540
  Roughing-In . . . A-2
  Seismic Anchoring . . . A-6

MODEL 5540 CABINET . . . 6
  Cabinet Assembly . . . 9
  Electrical Connection . . . 8
  Positioning, Leveling, and Anchoring . . . 6

MODEL 5540 RECESSED . . . 4
  Electrical Connection . . . 5
  Positioning, Leveling, and Anchoring . . . 4

MODELS 5545 & 5550
  Roughing-In . . . A-4
  Seismic Anchoring . . . A-7

MODELS 5545 & 5550 CABINET . . . 12
  Electrical Connection . . . 13
  Positioning, Leveling, and Anchoring . . . 12

MODELS 5545 & 5550 RECESSED . . . 10
  Electrical Connection . . . 11
  Positioning, Leveling, and Anchoring . . . 10

P

PERTINENT DATA . . . 1

POSITIONING, LEVELING, AND ANCHORING
  Model 5540 Cabinet . . . 6
  Model 5540 Recessed . . . 4
  Models 5545 & 5550 Cabinet . . . 12
  Models 5545 & 5550 Recessed . . . 10

R

RECESSED
  Model 5540 4
  Models 5545 & 5550 10

ROUGHING-IN
  Model 5540 . . . . . A-2
  Models 5545 & 5550 . . . . . A-4

S

SEISMIC ANCHORING
  Model 5540 . . . . . A-6
  Models 5545 & 5550 . . . . . A-7

T

TECHNICAL DATA 1

U

UNCRATING 3

W

WEIGHT 1

PARTS CATALOG

Castle®

3541, 3641, & 4241
EO GAS AERATOR

5540, 5545, & 5550
WARMING CABINET

MDT Biologic Company
1777 East Henrietta Road
P.O. Box 23077
Rochester, New York 14692, U.S.A.

MDT

Technology for Life

350270

ORDERING

For ordering information concerning parts listed in this Catalog contact your MDT Product Support Representative or your nearest MDT Regional Office. Or, you may contact:

MDT Biologic Company
P.O. Box 23077
Rochester, New York 14692
(716) 475-1400

NOTE ▶ All parts replaced under warranty shall be returned intact to MDT Biologic Company, P.O. Box 23077, Rochester, New York 14692

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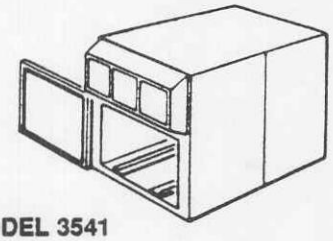
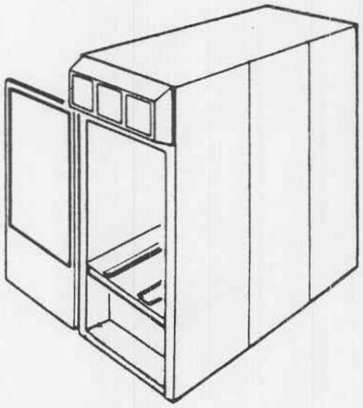
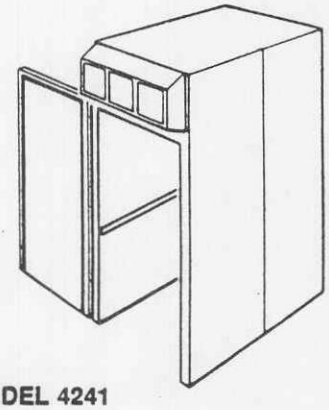
EO GAS AERATOR/WARMING CABINET



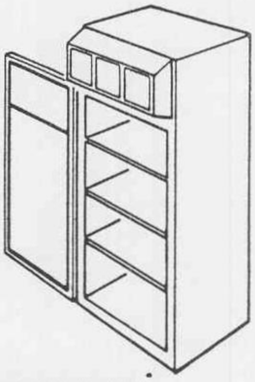
MODEL 3541



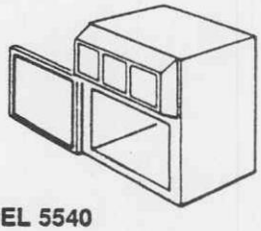
MODEL 3641



MODEL 4241



MODEL 5545 & 5550



MODEL 5540

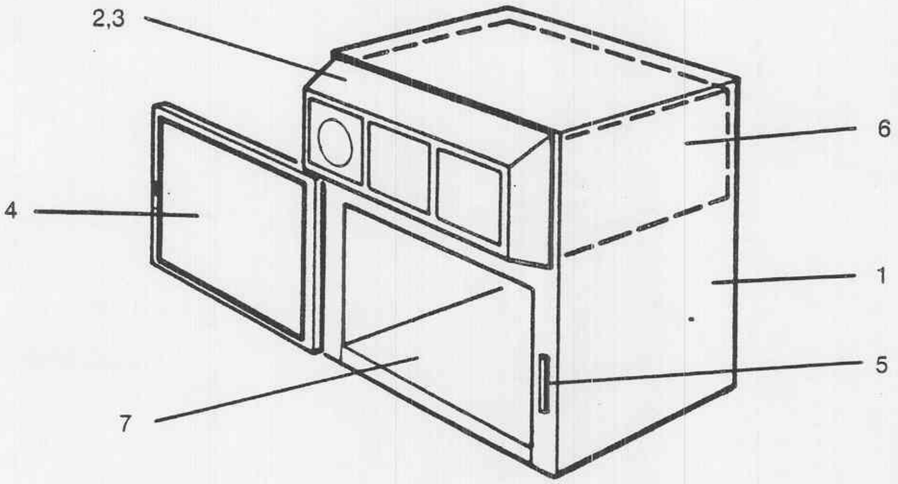
EO GAS AERATOR

WARMING CABINET

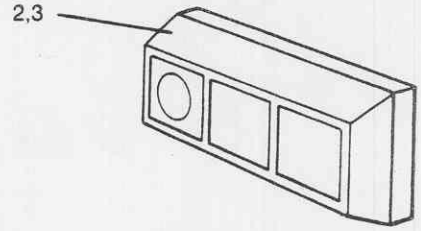
Table of Contents

Figure **Page**

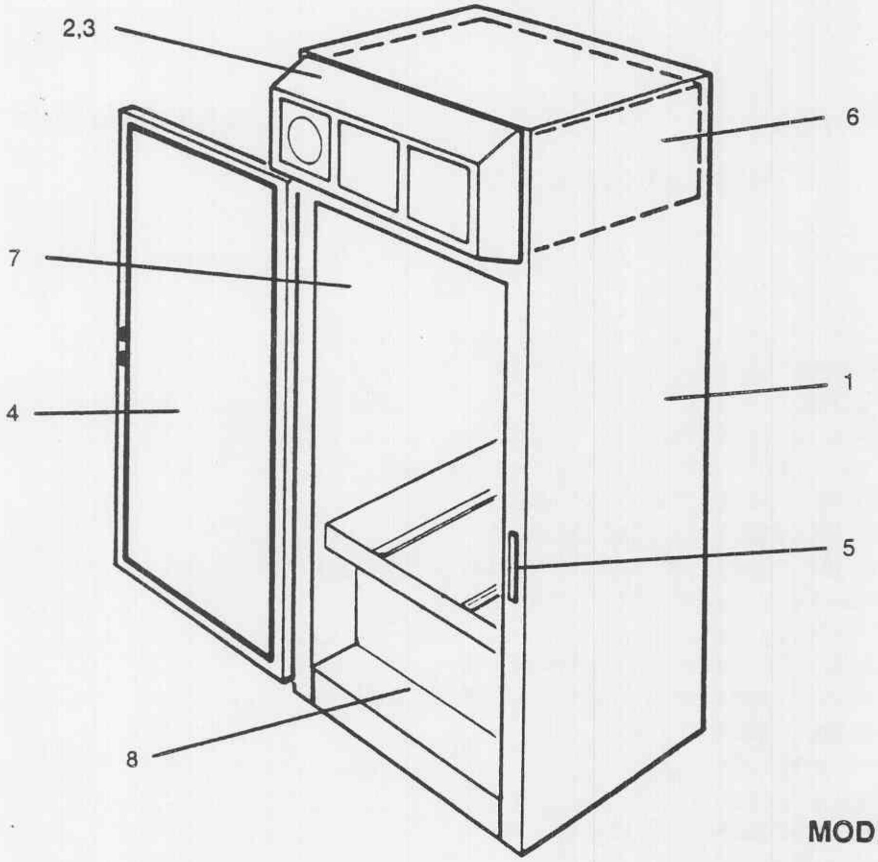
1 Final Assembly 2
2a Cabinet Package (3541 EO Gas Aerator) 4
2b Cabinet Package (3641 EO Gas Aerator) 6
2c Cabinet Package (4241 EO Gas Aerator) 8
2d Cabinet Package (5550 & 5545 Warming Cabinet) 10
2e Cabinet Package (5540 Warming Cabinet) 12
3a Control Head Components (Unit Mounted) 14
3b Control Head Components (Remote Mounting Package) 16
3c Control Head Components (Air Filter Bezel) 18
4 Recorder Package (Optional) 21
5a Door Assembly Components (3541 & 5540) 22
5b Door Assembly Components (3641, 4241, 5550 & 5545) 24
6a Unit Components (3541 & 5540) 26
6b Unit Components (3641) 28
6c Unit Components (4241) 30
6d Unit Components (5550 & 5545) 32
7 Control Box Components 34
8 Body Components 40
9 Frame & Track Components (3641) 42
10 Stand Package (3541) 44
Recommended Spare Parts List 45



MODEL 3541 & 5540



REMOTE MOUNTED CONTROL HEAD
(EO Gas Aerator Only)

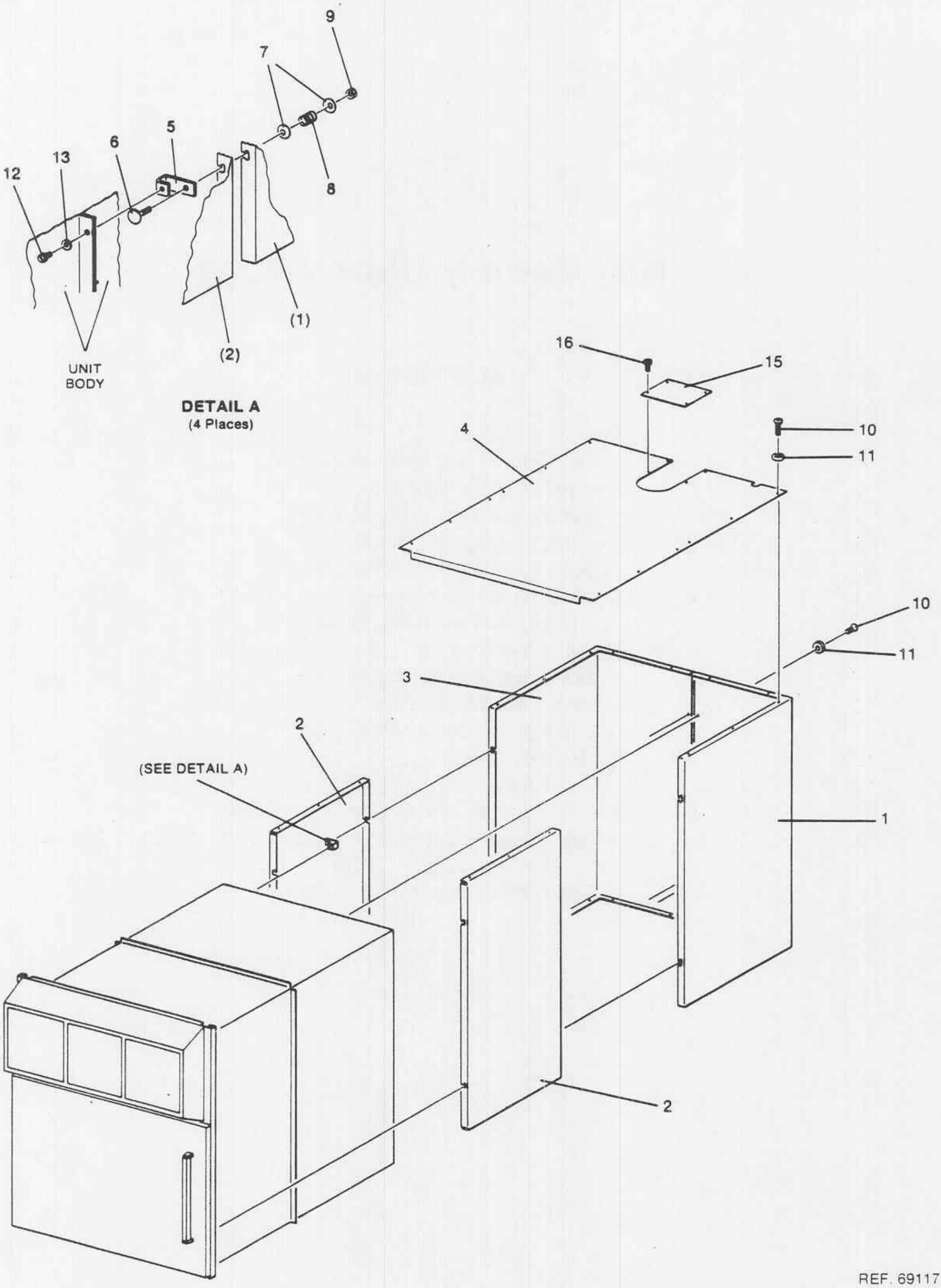


MODEL 3641, 4241, 5545 & 5550

FIGURE 1 - FINAL ASSEMBLY

Final Assembly - Refer to Figure 1

ITEM	DESCRIPTION
1	Cabinet Package • See Figure 2 for listing of parts
2	Control Head Components • See Figure 3 for listing of parts
3	Recorder Package (Optional) • See Figure 4 for listing of parts
4	Door Assembly Components • See Figure 5 for listing of parts
5	Unit Components • See Figure 6 for listing of parts
6	Control Box Components • See Figure 7 for listing of parts
7	Body Components • See Figure 8 for listing of parts
9	Frame & Track Components (Model 3641) • See Figure 9 for listing of parts
—	Stand Package (Model 3541) • See Figure 10 for listing of parts

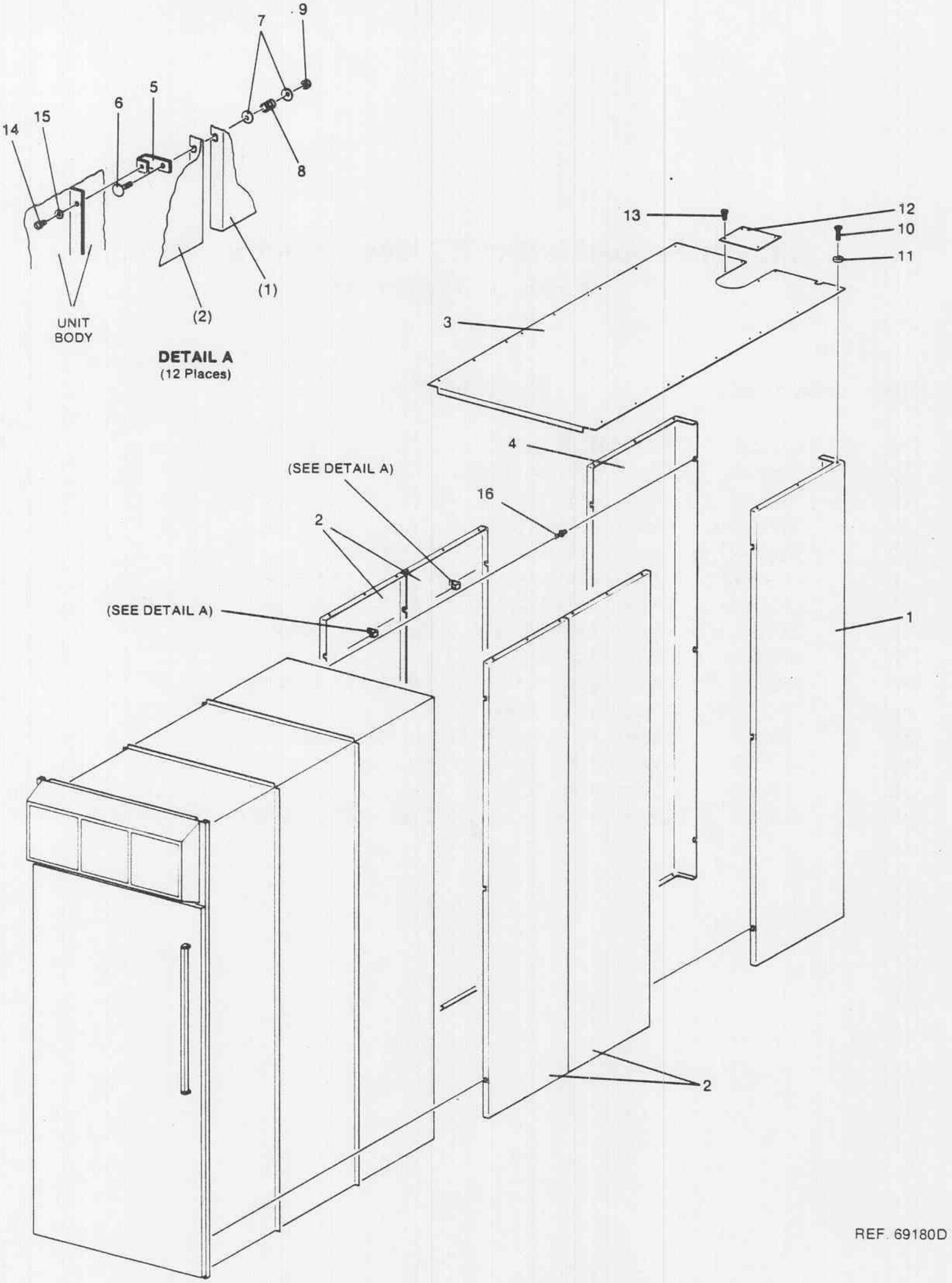

9
7
5
6
13
12
8
(1)
(2)
UNIT BODY
DETAIL A
(4 Places)
16
15
4
10
11
10
11
3
2
(SEE DETAIL A)
1
2

REF. 69117D

FIGURE 2a - CABINET PACKAGE (Model 3541)

Cabinet Package (3541 EO Gas Aerator) - 69117
Refer to Figure 2a

ITEM	PART NO.	DESCRIPTION
1	69054	Panel, Right Side
2	69114	Panel, Side Extension
3	60529	Panel, Left Side
4	69183	Cover, Cabinet Top
5	69116	Bracket, Extension Panel Mounting
6	13444	Stud, Panel Mounting, 1/4-20 x 1-1/4 long
7	13442	Washer, 5/16 ID x 1 OD Spring
8	22413	Spring, Compression, 9/16 dia x 3/4 long
9	E5186	Nut, 1/4-20 Hex
10	E6896	Screw, #10-24 x 3/8 Self-Tapping Pan Head
11	59977	Washer, #10 Nylon Trim
12	E6291	Screw, #10-24 x 3/8 Slotted Pan Head
13	E0152	Washer, #10 Internal Tooth Lock
15	69197	Cover, Duct Opening
16	E2194	Screw, #6-32 x 1/4 Self-Tapping Phillips Pan Head (Chrome)

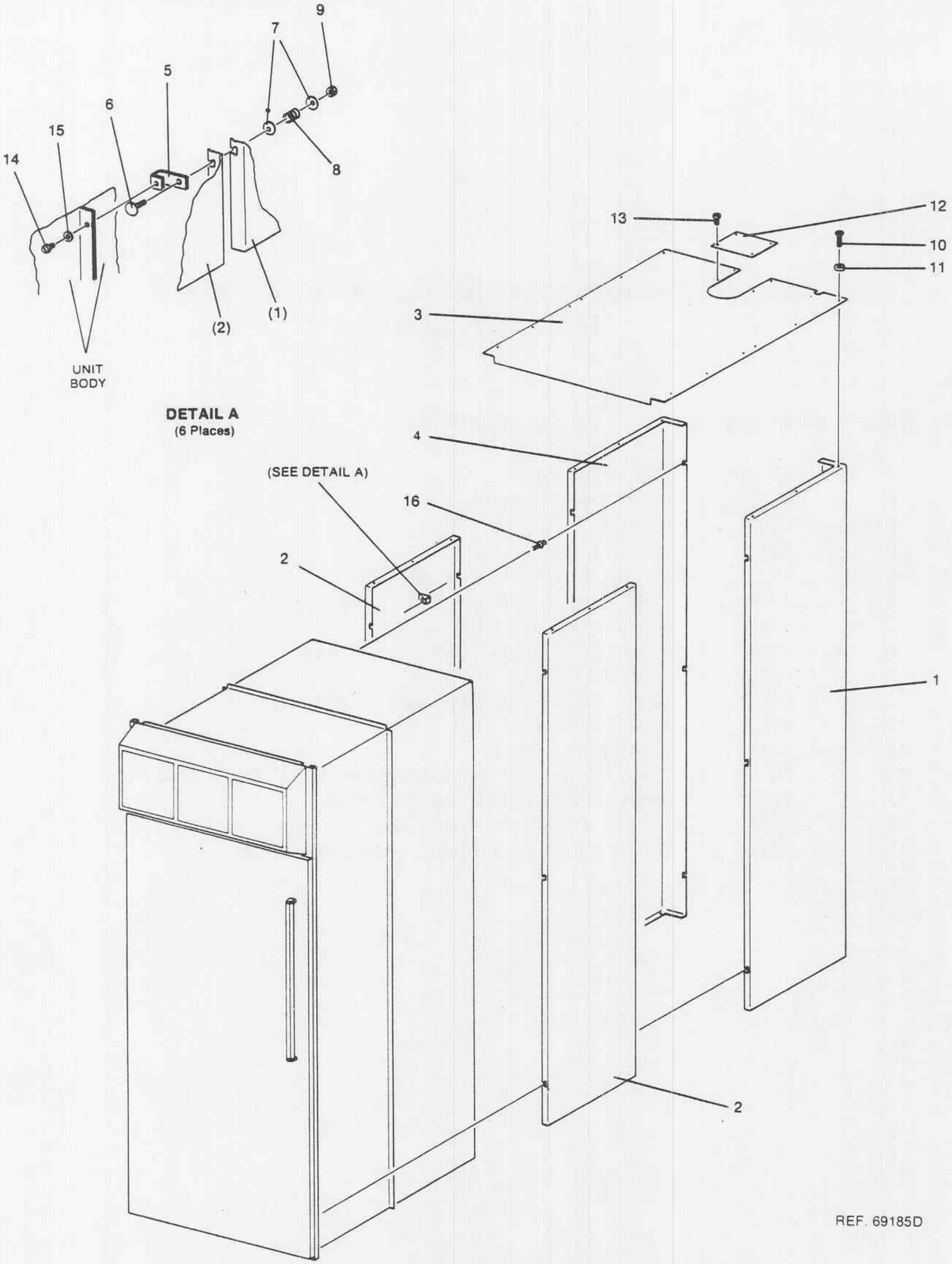

9
7
5
6
15
14
8
(1)
(2)
UNIT
BODY
DETAIL A
(12 Places)
13
12
10
11
3
4
(SEE DETAIL A)
16
2
(SEE DETAIL A)
1
2

REF. 69180D

FIGURE 2b - CABINET PACKAGE (Model 3641)

Cabinet Package (3641 EO Gas Aerator) - 69180
Refer to Figure 2b

ITEM	PART NO.	DESCRIPTION
1	69020	Panel, Right Side
2	69181	Panel, Side Extension
3	69184	Cover, Cabinet Top
4	60530	Panel, Left Side
5	69116	Bracket, Extension Panel Mounting
6	13444	Stud, Panel Mounting, 1/4-20 x 1-1/4 long
7	13442	Washer, 5/16 ID x 1 OD Spring
8	22413	Spring, Compression, 9/16 dia x 3/4 long
9	E5186	Nut, 1/4-20 Hex
10	E6896	Screw, #10-24 x 3/8 Self-Tapping Pan Head
11	59977	Washer, #10 Nylon Trim
12	69197	Cover, Duct Opening
13	E2194	Screw, #6-32 x 1/4 Self-Tapping Phillips Pan Head (Chrome)
14	E6291	Screw, #10-24 x 3/8 Slotted Pan Head
15	E0152	Washer, #10 Internal Tooth Lock
16	E5293	Screw, #10-24 x 3/8 Shoulder Hex Socket Head

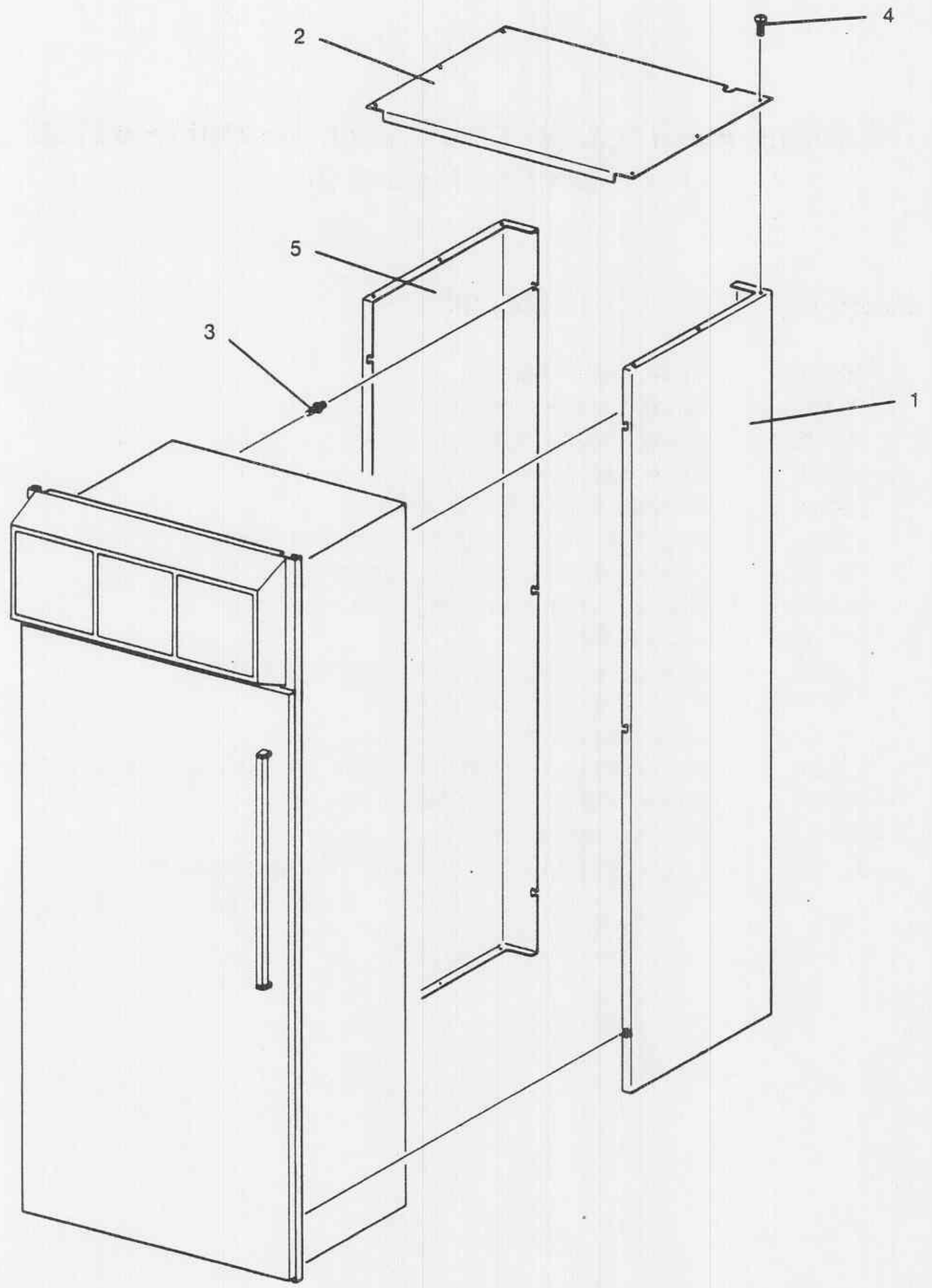

9
7
5
6
15
14
8
(2)
(1)
UNIT BODY
DETAIL A
(6 Places)
13
12
10
11
3
4
(SEE DETAIL A)
16
2
1
2

REF. 69185D

FIGURE 2c - CABINET PACKAGE (Model 4241)

Cabinet Package (4241 EO Gas Aerator) - 69185
Refer to Figure 2c

ITEM	PART NO.	DESCRIPTION
1	69020	Panel, Right Side
2	69181	Panel, Side Extension
3	69183	Cover, Cabinet Top
4	60530	Panel, Left Side
5	69116	Bracket, Extension Panel Mounting
6	13444	Stud, Panel Mounting, 1/4-20 x 1-1/4 long
7	13442	Washer, 5/16 ID x 1 OD Spring
8	22413	Spring, Compression, 9/16 dia x 3/4 long
9	E5186	Nut, 1/4-20 Hex
10	E6896	Screw, #10-24 x 3/8 Self-Tapping Pan Head
11	59977	Washer, #10 Nylon Trim
12	69197	Cover, Duct Opening
13	E2194	Screw, #6-32 x 1/4 Self-Tapping Phillips Pan Head (Chrome)
14	E6291	Screw, #10-24 x 3/8 Slotted Pan Head
15	E0152	Washer, #10 Internal Tooth Lock
16	E5293	Screw, #10-24 x 3/8 Shoulder Hex Socket Head

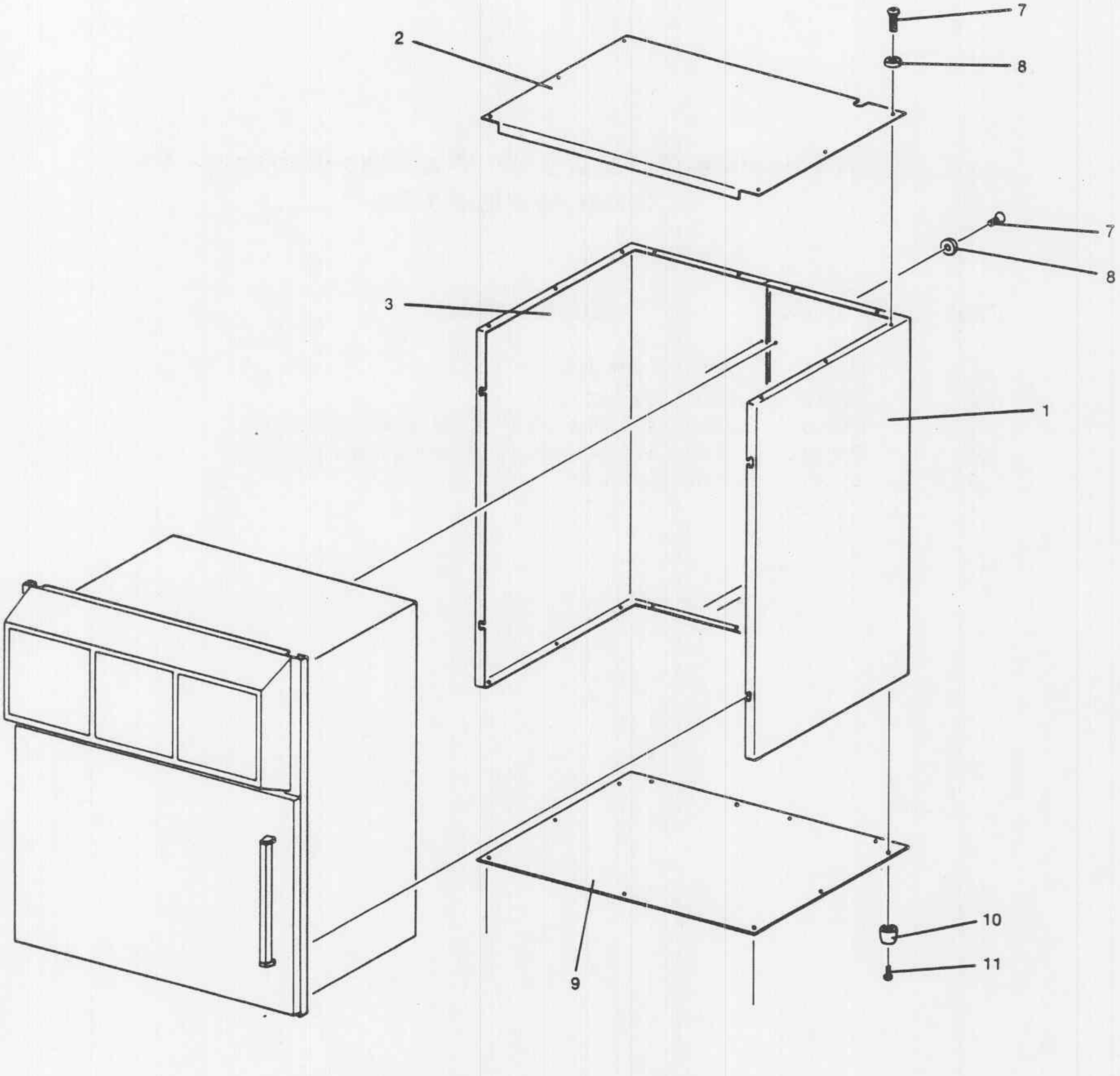


REF. 69021C

FIGURE 2d - CABINET PACKAGE (Model 5550 & 5545)

Cabinet Package (5550 & 5545 Warming Cabinet) - 69021
Refer to Figure 2d

ITEM	PART NO.	DESCRIPTION
1	69020	Panel, Right Side
2	69182	Cover, Cabinet Top
3	E5293	Screw, #10-24 x 3/8 Shoulder Hex Socket Head
4	E6896	Screw, #10-24 x 3/8 Self-Tapping Pan Head
5	60530	Panel, Left Side


7
8
2
7
8
3
1
10
11
9

REF. 69103C

FIGURE 2e - CABINET PACKAGE (Model 5540)

Cabinet Package (5540 Warming Cabinet) - 69103
Refer to Figure 2e

ITEM	PART NO.	DESCRIPTION
1	69054	Panel, Right Side
2	69182	Cover, Cabinet Top
3	60529	Panel, Left Side
7	E6896	Screw, #10-24 x 3/8 Self-Tapping Pan Head
8	59977	Washer, #10 Nylon Trim
9	69019	Panel, Bottom Cover
10	14813	Foot
11	E5210	Screw, #10-24 x 3/4 Self-Tapping Pan Head

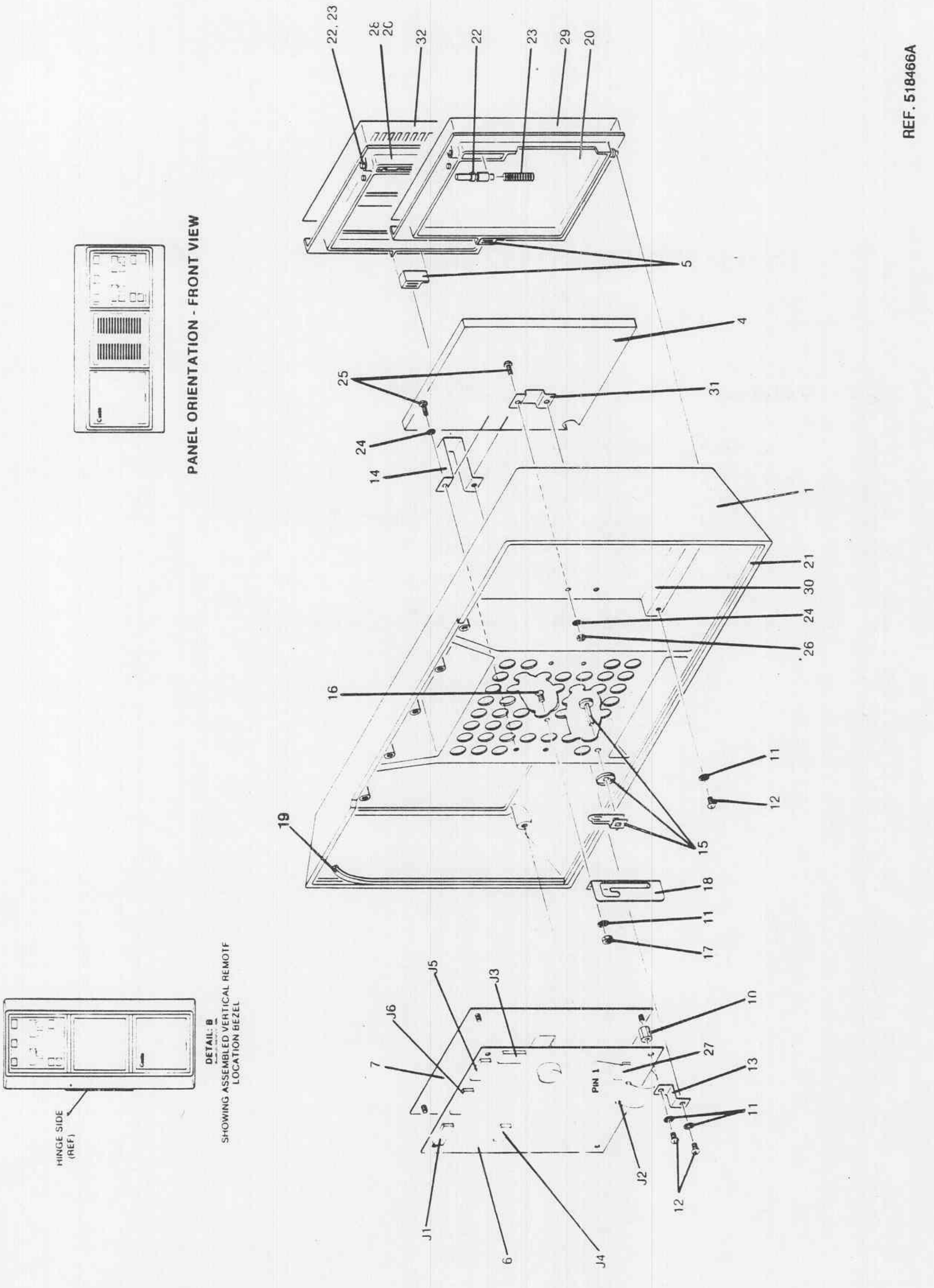
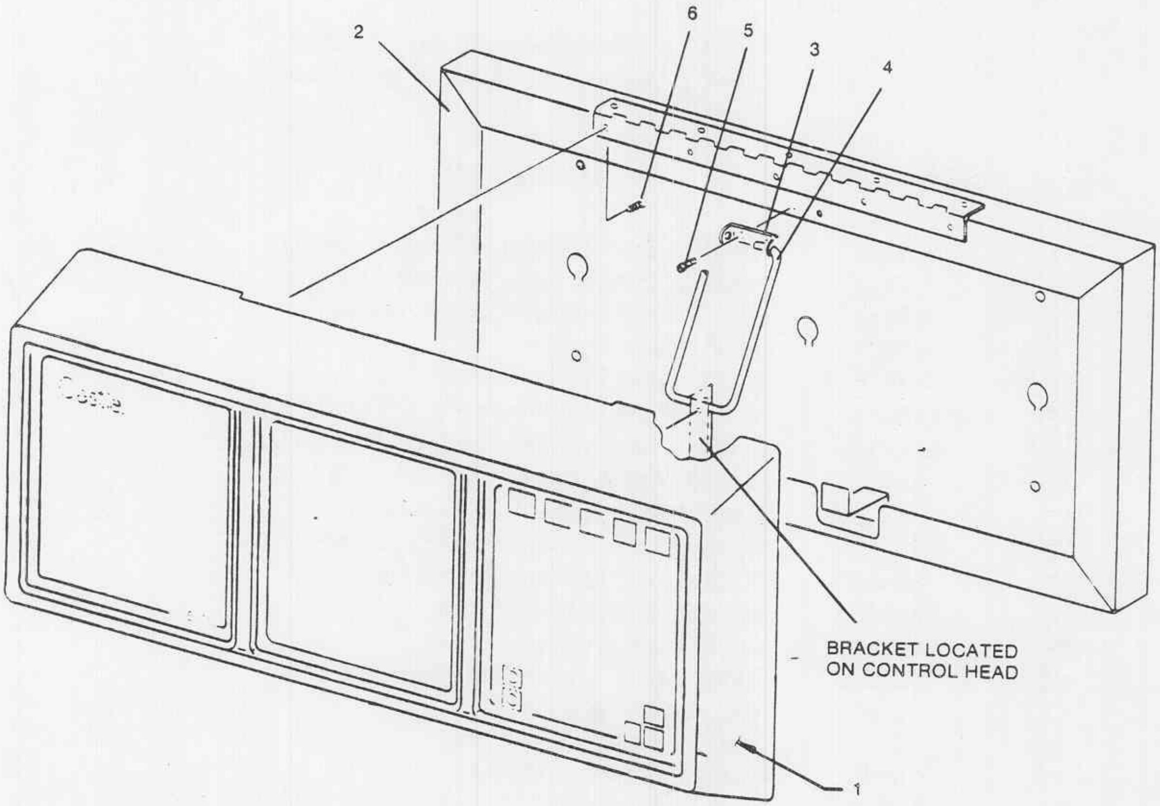

REF. 518466A
PANEL ORIENTATION - FRONT VIEW
DETAIL: B
SHOWING ASSEMBLED VERTICAL REMOTE LOCATION BEZEL
HINGE SIDE (REF)
PIN 1
22, 23
28
20
32
22
23
29
20
5
4
25
31
24
14
1
21
30
24
26
16
11
12
15
19
18
11
17
J5
J3
J6
7
10
27
13
11
J2
12
J1
6
J4

FIGURE 3a - CONTROL HEAD COMPONENTS (Unit Mounted)

Control Head Components (Unit Mounted) - Refer to Figure 3a

518467 Control Head (EO Gas Aerator)
518468 Control Head (Warming Cabinet)

ITEM	PART NO.	DESCRIPTION
1	69239	Housing, Control Head (EO Gas Aerator)
	86717	Housing, Control Head (Warming Cabinet)
4	69240	Filter, First Stage Air (EO Gas Aerator)
5	86531	Catch, Magnetic Door
6	513855	Board, Control Head Display P.C.
7	518412	Control Panel, Control Head (EO Gas Aerator)
	518413	Control Panel, Control Head (Warming Cabinet)
10	86532	Standoff, #8-32 Internal Thread x 1/2 long
11	E6389	Washer, #8 Internal Tooth Lock
12	E0069	Screw, #8-32 x 1/4 Phillips Pan Head
13	86445	Bracket, Control Panel Mounting
14	86533	Bracket, Center Door Catch
15	86440	Latch, Control Head
16	E2229	Screw, #8-32 x 1/2 Phillips Flat Head
17	E6391	Nut, #8-32 Hex
18	86513	Bracket, Control Head Lift
19	86655	Gasket, Control Head Side
20	513565	Door, Control Head
21	86654	Gasket, Control Head Bottom
22	86534	Pin, Door Hinge
23	86535	Spring, Compression, 1/4 dia x 1-3/8 long
24	E2053	Washer, #4 Internal Tooth Lock
25	E0013	Screw, #4-40 x 1/2 Phillips Pan Head
26	E7028	Nut, #4-40 Hex
27	–	Eprom
28	69000	Door, Air Inlet
29	69066	Decal, Door (MDT/Castle)
30	69238	Panel, Recorder Section Closure
31	86529	Bracket, Door Catch
32	69001	Decal, Air Inlet Door (EO Gas Aerator)
	86486	Decal, Center Compartment Door


2
6
5
3
4
Castle
BRACKET LOCATED ON CONTROL HEAD
1

REF. 518583

FIGURE 3b - CONTROL HEAD COMPONENTS (Remote Mounting Package)

Control Head Components (Remote Mounting Package) - 518583
Refer to Figure 3b

ITEM	PART NO.	DESCRIPTION
1	518467	Control Head (EO Gas Aerator) • See Figure 3a for listing of parts
2	86652	Box, Remote Location Mounting
3	86648	Bracket, Lift Rod Support
4	86512	Rod, Control Head Lift
5	E5027	Screw, #8-32 x 3/8 Phillips Pan Head
6	E6186	Screw, #6-32 x 5/16 Slotted Flat Head
—	87797	Connector, 10 Wire
—	530472	Terminal Assembly, 10 Wire
—	87782	Connector, Conduit Elbow, 3/8 - 1/2 dia Cable
—	E0263	Nut, 1/2-13 Conduit Lock

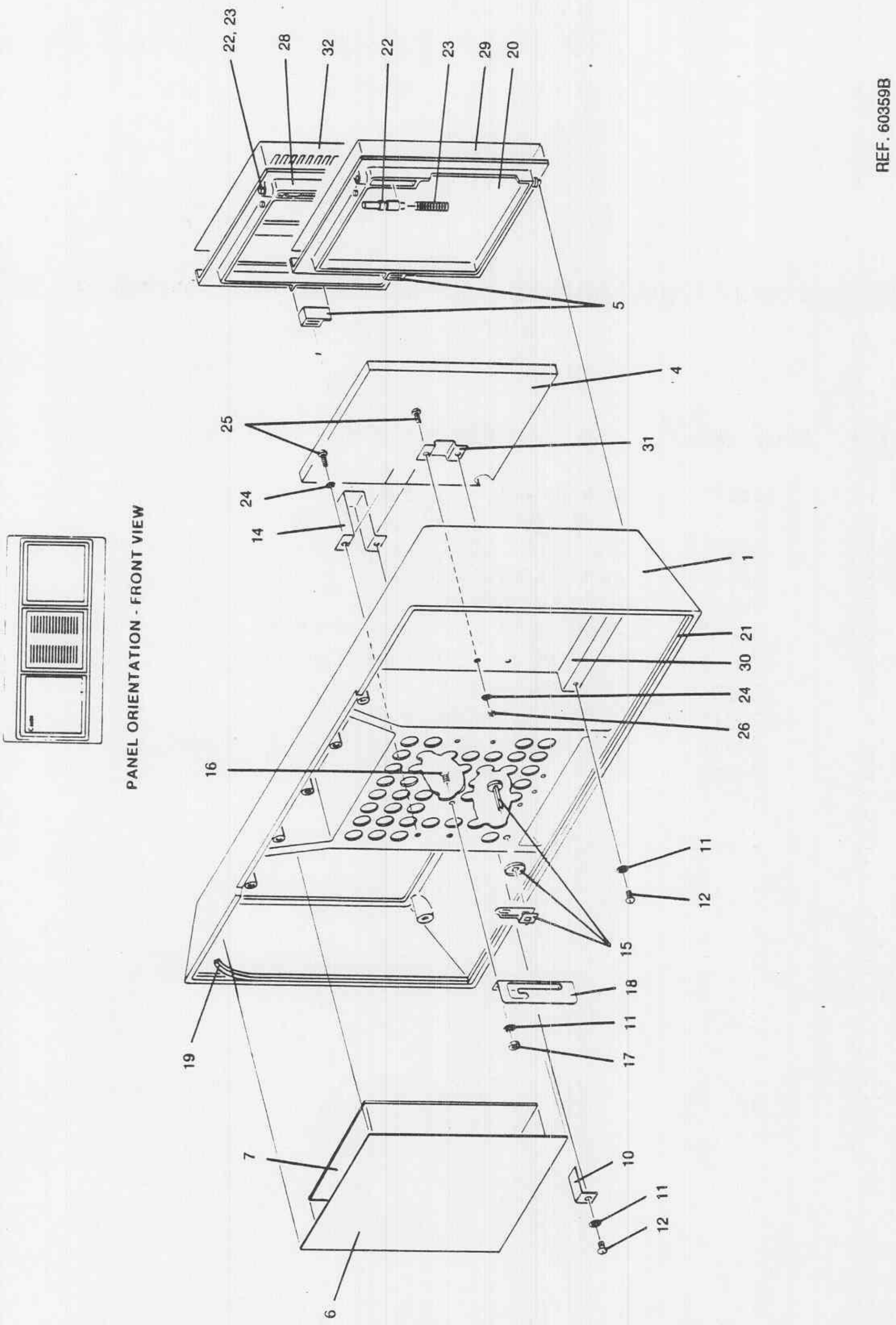

22, 23
28
32
22
23
29
20
REF. 60359B
5
4
25
31
24
14
PANEL ORIENTATION - FRONT VIEW
1
21
30
24
26
16
11
12
15
18
11
17
19
7
10
11
12
6

FIGURE 3c - CONTROL HEAD COMPONENTS (Air Filter Bezel)

Control Head Components (Air Filter Bezel) - 60359
Refer to Figure 3c

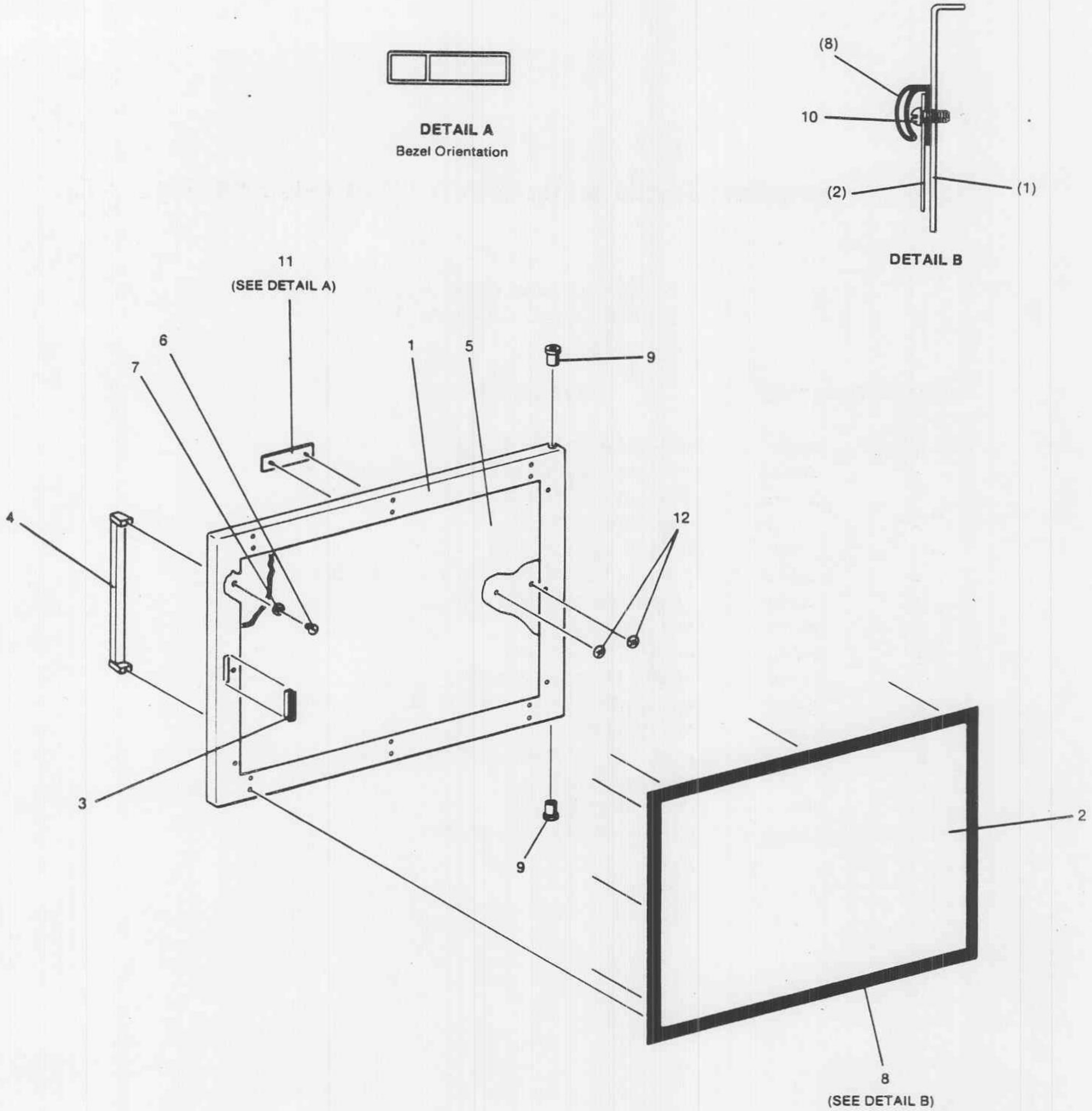
ITEM	PART NO.	DESCRIPTION
1	69239	Housing, Control Head (EO Gas Aerator)
4	69240	Filter, First Stage Air (EO Gas Aerator)
5	86531	Catch, Magnetic Door
6	60360	Cover, Display Section Closure
7	60361	Decal, Display Section Cover
10	60362	Clip, Cover Retaining
11	E6389	Washer, #8 Internal Tooth Lock
12	E0069	Screw, #8-32 x 1/4 Phillips Pan Head
14	86533	Bracket, Center Door Catch
15	86440	Latch, Control Head
16	E2229	Screw, #8-32 x 1/2 Phillips Flat Head
17	E6391	Nut, #8-32 Hex
18	86513	Bracket, Control Head Lift
19	86655	Gasket, Control Head Side
20	513565	Door, Control Head
21	86654	Gasket, Control Head Bottom
22	86534	Pin, Door Hinge
23	86535	Spring, Compression, 1/4 dia x 1-3/8 long
24	E2053	Washer, #4 Internal Tooth Lock
25	E0013	Screw, #4-40 x 1/2 Phillips Pan Head
26	E7028	Nut, #4-40 Hex
28	69000	Door, Air Inlet
29	69066	Decal, Door (MDT/Castle)
30	69238	Panel, Recorder Section Closure
31	86529	Bracket, Door Catch
32	69001	Decal, Air Inlet Door (EO Gas Aerator)

NOTES

Recorder Package (Optional) - [Not Illustrated]

518587 Recorder Package (60 Hz)
518586 Recorder Package (50 Hz)

ITEM	PART NO.	DESCRIPTION
1	69191	Recorder Assembly, 24 Hr, 24VAC, 60 Hz
—	86955	• Motor, Chart Drive, 24 Hr, 24VAC, 60 Hz
—	89486	• Motor, Pen Arm Drive, 24VAC, 60 Hz
—	89484	• Arm Assembly, Red Pen
	69437	Recorder Assembly, 24 Hr, 24VAC, 50 Hz
—	86438	• Motor, Chart Drive, 24 Hr, 24VAC, 50 Hz
—	89484	• Arm Assembly, Red Pen
2	86600	Door, Recorder
3	86431	Decal, Recorder Door
5	86445	Bracket, Recorder Mounting
6	E6389	Washer, #8 Internal Tooth Lock
7	E6391	Nut, #8-32 Hex
8	530482	Chart, 24 Hour Recorder (Box of 100)
9	518585	Harness, Recorder
10	86531	Catch, Magnetic Door
11	69429	Cartridge, Red Ink (Box of 6)


DETAIL A
Bezel Orientation
(8)
10
(2)
(1)
DETAIL B
11
(SEE DETAIL A)
6
7
1
5
9
4
12
3
9
2
8
(SEE DETAIL B)

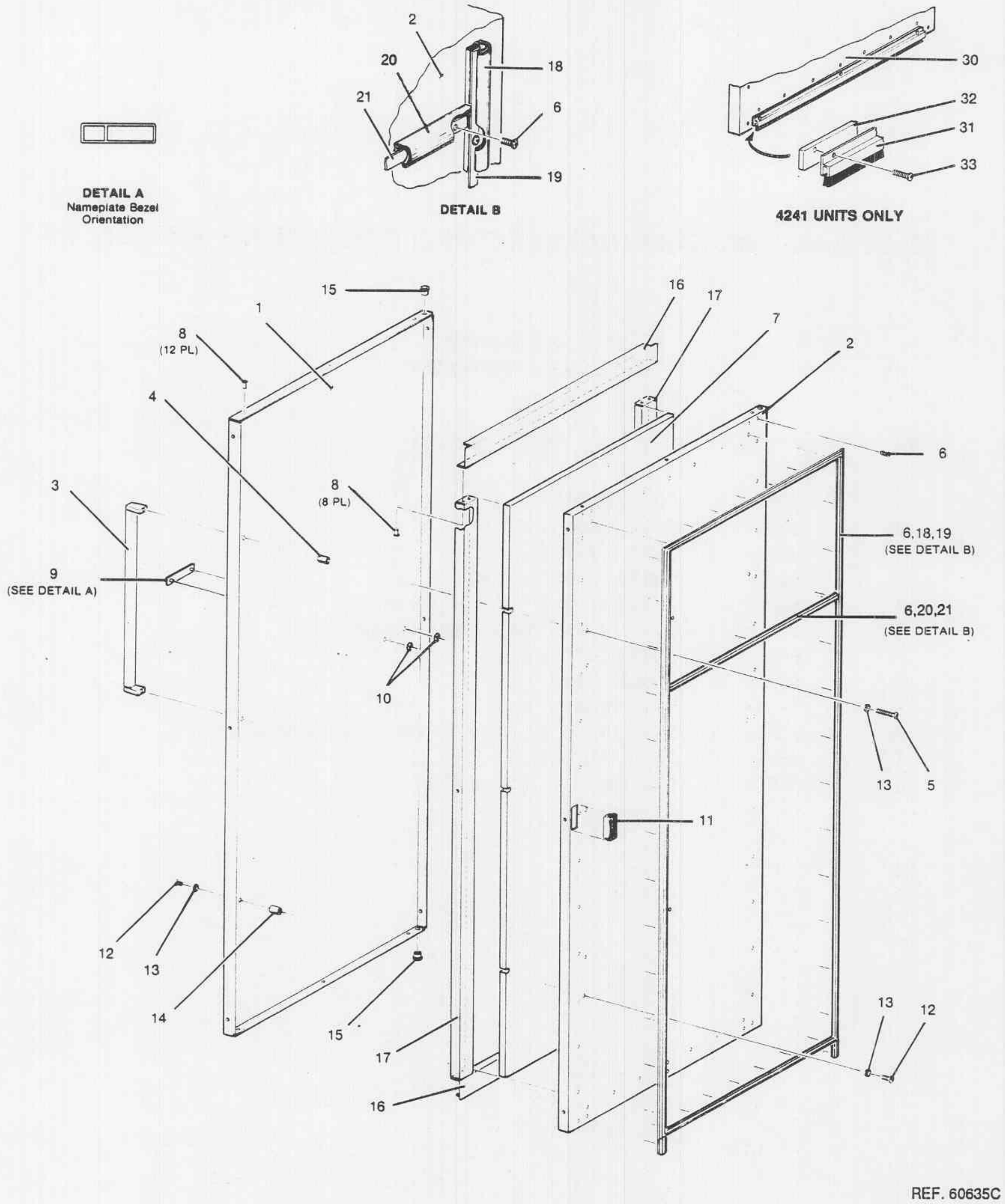
REF. 69401B

FIGURE 5a - DOOR ASSEMBLY COMPONENTS (3541 & 5540)

Door Assembly Components (3541 & 5540) - Refer to Figure 5a

69062 Door Assembly (L.H.)
69170 Door Assembly (R.H.)

ITEM	PART NO.	DESCRIPTION
1	69061	Panel, Door Outer
2	69060	Panel, Door Inner
3	69039	Catch, Magnetic Door
4	69056	Handle, Door (12 long)
5	69057	Insulation, Door (20-7/8 x 25-7/8)
6	E4945	Screw, #10-24 x 3/8 Slotted Round Head
7	E4638	Washer, #10 Flat
8	69058	Gasket, Door
9	69042	Bushing, Door Hinge
10	E2195	Screw, #8-32 x 3/8 Self-Tapping Phillips Binding Head
11	86547	Bezel, Nameplate
12	E4628	Clip, Speed for 1/8 dia Shaft



DETAIL A
Nameplate Bezel Orientation

DETAIL B

4241 UNITS ONLY

2
20
18
21
6
19
30
32
31
33
15
16
17
1
7
8
(12 PL)
2
4
6
3
8
(8 PL)
6,18,19
(SEE DETAIL B)
9
(SEE DETAIL A)
6,20,21
(SEE DETAIL B)
10
13
5
11
12
13
14
15
13
12
17
16

REF. 60635C

FIGURE 5b - DOOR ASSEMBLY COMPONENTS (3641, 4241, 5550 & 5545)

Door Assembly Components (3641, 4241, 5550 & 5545)
Refer to Figure 5b

60620	Door Assembly (L.H.) - 3641, 5550 & 5545
60621	Door Assembly (L.H.) - 4241
60622	Door Assembly (R.H.) - 3641, 5550 & 5545
60623	Door Assembly (R.H.) - 4241

ITEM	PART NO.	DESCRIPTION
1	69452	Panel, Door Outer
2	69451	Panel, Door Inner
3	69865	Handle, Door (18 long)
4	69869	Spacer, 13/64 ID x 5/16 OD x 7/8 long
5	E7069	Screw, #10-24 x 1-1/2 Slotted Flat Head
6	E2195	Screw, #8-32 x 3/8 Self-Taping Phillips Binding Head
7	69868	Insulation, Door (25-3/4 x 55-3/4)
8	E7052	Rivet, 1/8 dia Domed Pop
9	86547	Bezel, Nameplate
10	E4628	Clip, Speed for 1/8 dia Shaft
11	60624	Catch, Magnetic Door
12	E4636	Screw, #10-32 x 1/2 Phillips Flat Head
13	59977	Washer, #10 Nylon Trim
14	69870	Spacer, #10-32 Internal Thread x 7/8 long
15	69042	Bushing, Door Hinge
16	69861	Brace, Door Support Top & Bottom (29-25/32 long)
17	69862	Brace, Door Support Side (55-25/32 long)
18	69037	Gasket, Door
19	69864	Strip, Door Gasket Mounting (57-7/8 long)
20	69216	Gasket, Shelf
21	69863	Strip, Door Gasket Mounting (27-1/4 long)
31	69217	Seal, Door Bottom Brush (4241)
32	69218	Spacer, Door Bottom Brush Seal (4241)
33	E2200	Screw, #8-32 x 5/8 Self-Tapping Phillips Pan Head

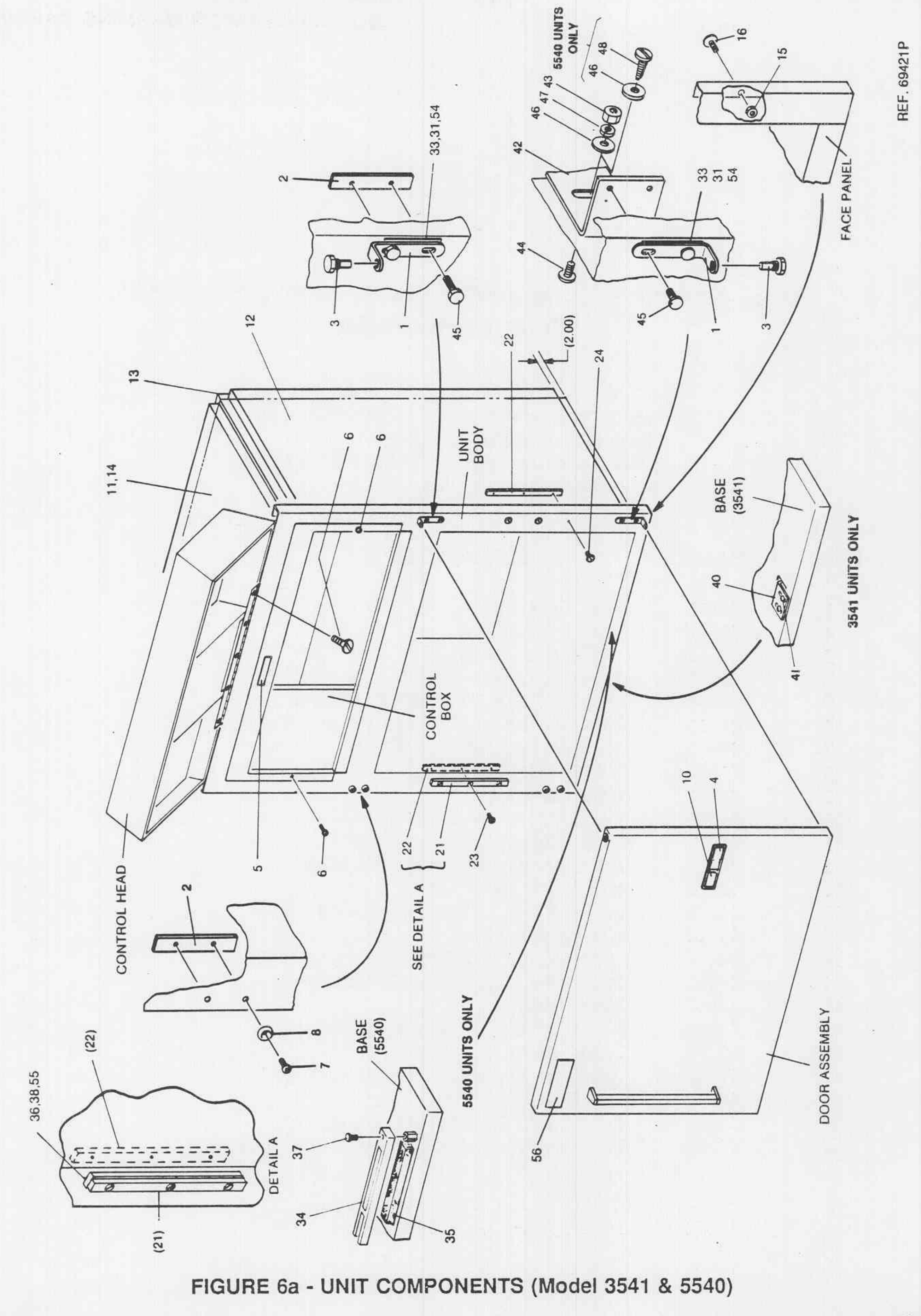

5540 UNITS ONLY
48
46
47
43
46
42
16
15
REF. 69421P
2
33,31,54
33
31
54
44
45
1
3
FACE PANEL
12
13
22
(2.00)
24
11,14
6
6
UNIT BODY
BASE (3541)
3541 UNITS ONLY
40
41
CONTROL BOX
10
4
CONTROL HEAD
2
5
6
22
21
23
SEE DETAIL A
5540 UNITS ONLY
8
7
BASE (5540)
36,38,55
(22)
(21)
DETAIL A
37
34
35
56
DOOR ASSEMBLY

FIGURE 6a - UNIT COMPONENTS (Model 3541 & 5540)

Unit Components (3541 & 5540) - Refer to Figure 6a

ITEM	PART NO.	DESCRIPTION
1	69044	Bracket, Door Hinge Mounting
2	69133	Plate, Door Hinge Mounting Bracket
3	69047	Pin, Door Hinge
4	69083	Decal, Castle EO Gas Aerator
	69084	Decal, Castle Warming Cabinet
5	518579	Decal, Identification (3541)
	518578	Decal, Identification (5540)
6	E2169	Screw, #6-32 x 3/8 Self-Tapping Phillips Pan Head
7	E4636	Screw, #10-32 x 1/2 Phillips Flat Head
8	59977	Washer, #10 Nylon Trim
10	513603	Decal, MDT
11	69242	Insulation, Top Front
12	69245	Insulation, Side (20-1/2 x 30-3/4)
13	69246	Insulation, Plenum (26 x 30-1/2)
14	69247	Insulation, Top Rear
15	E5186	Nut, 1/4-20 Hex
16	69171	Stud, Panel Mounting, 1/4-20 x 3/4 long
21	69045	Plate, Magnetic Catch Strike
22	69046	Plate, Strike Plate Mounting
23	E6850	Screw, #6-32 x 1 Phillips Flat Head
24	E0074	Screw, #6-32 x 3/8 Phillips Truss Head
31	60596	Shim, Door Hinge (7/64 thick)
32	—	Adhesive, Insulation
33	69445	Shim, Door Hinge (1/16 thick)
34	69165	Cover, Shelf Air Filter (5540)
35	69195	Filter, Shelf Air (5540)
36	60592	Shim, Door Strike Plate (7/64 thick)
37	69164	Screw, #8-32 x 5/8 Thumbscrew
38	60593	Shim, Door Strike Plate (1/16 thick)
40	69443	Stop, Load Car (3541)
41	E2194	Screw, #6-32 x 1/4 Self-Tapping Phillips Pan Head
42	69450	Bracket, Hinge Support
43	E0149	Nut, #10-32 Hex
44	E6898	Screw, #10-32 x 1/2 Phillips Truss Head
45	E4699	Screw, #10-32 x 3/4 Hex Head
46	E6563	Washer, #10 Flat
47	E7034	Washer, #10 Helical Spring Lock
54	60672	Shim, Door Hinge (23/64 thick)
55	56081	Shim, Door Strike Plate (23/64 thick)
56	350171	Label, EO Gas Warning

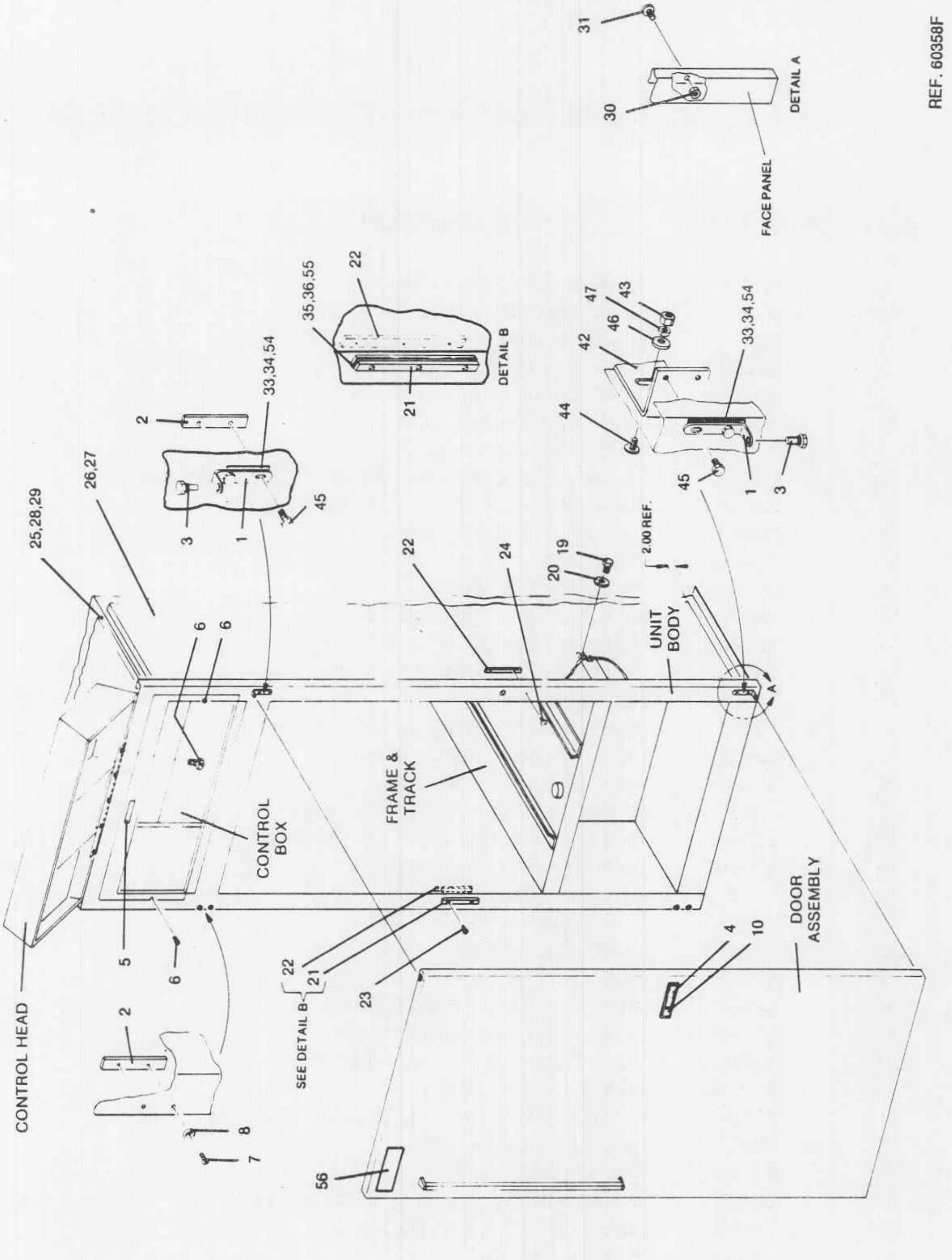

CONTROL HEAD
25,28,29
26,27
2
3
1
45
33,34,54
35,36,55
22
21
DETAIL B
6
6
5
6
CONTROL BOX
FRAME & TRACK
22
24
20
19
2.00 REF.
UNIT BODY
44
42
46
47
43
33,34,54
45
1
3
30
31
FACE PANEL
DETAIL A
A
SEE DETAIL B
22
21
23
4
10
DOOR ASSEMBLY
2
8
7
56
REF. 60358F

FIGURE 6b - UNIT COMPONENTS (Model 3641)

Unit Components (3641) - Refer to Figure 6b

ITEM	PART NO.	DESCRIPTION
1	69044	Bracket, Door Hinge Mounting
2	69133	Plate, Door Hinge Mounting Bracket
3	69047	Pin, Door Hinge
4	69083	Decal, Castle EO Gas Aerator
5	518580	Decal, Identification (3641)
6	E2169	Screw, #6-32 x 3/8 Self-Tapping Phillips Pan Head
7	E4636	Screw, #10-32 x 1/2 Phillips Flat Head
8	59977	Washer, #10 Nylon Trim
10	513603	Decal, MDT
19	E6810	Screw, 1/4-20 x 1/2 Hex Head
20	E5413	Washer, 1/4 Helical Spring Lock
21	69866	Plate, Magnetic Catch Strike
22	69867	Plate, Strike Plate Mounting
23	E6850	Screw, #6-32 x 1 Phillips Flat Head
24	E0074	Screw, #6-32 x 3/8 Phillips Truss Head
25	69242	Insulation, Top Front
26	69243	Insulation, Side (20-1/2 x 69-7/8)
27	69244	Insulation, Plenum (26 x 69)
28	69247	Insulation, Top Rear
29	69248	Insulation, Top Middle
30	E5186	Nut, 1/4-20 Hex
31	69171	Stud, Panel Mounting, 1/4-20 x 3/4 long
32	–	Adhesive, Insulation
33	69445	Shim, Door Hinge (1/16 thick)
34	60596	Shim, Door Hinge (7/64 thick)
35	60640	Shim, Door Strike Plate (7/64 thick)
36	60641	Shim, Door Strike Plate (1/16 thick)
42	69450	Bracket, Hinge Support
43	E0149	Nut, #10-32 Hex
44	E6898	Screw, #10-32 x 1/2 Phillips Truss Head
45	E4699	Screw, #10-32 x 3/4 Hex Head
46	E6563	Washer, #10 Flat
47	E7034	Washer, #10 Helical Spring Lock
53	69153	Frame & Track Assembly • See Figure 9 for listing of parts
54	60672	Shim, Door Hinge (23/64 thick)
55	60671	Shim, Door Strike Plate (23/64 thick)
56	350171	Label, EO Gas Warning

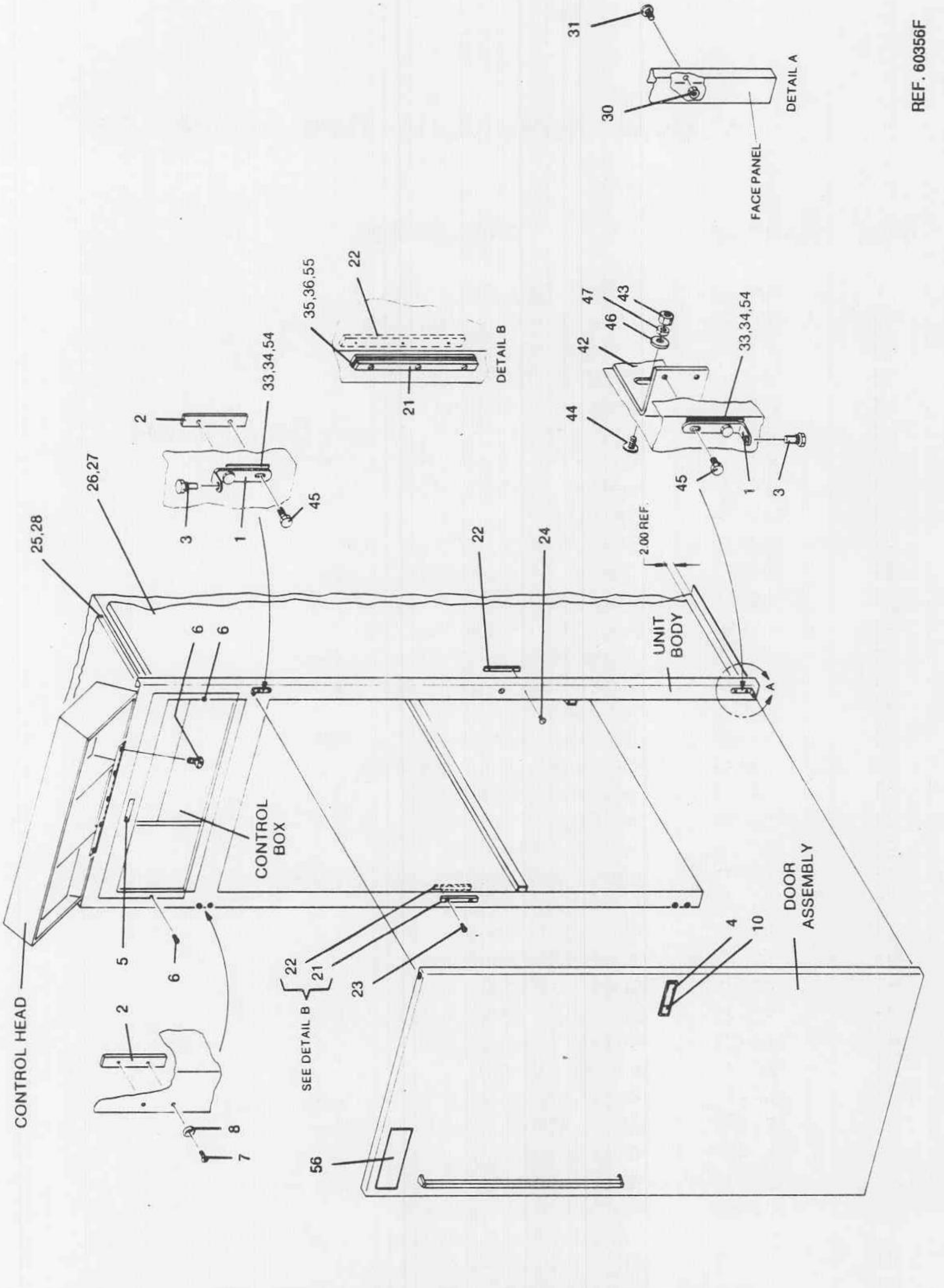

CONTROL HEAD
25,28
26,27
2
3
1
45
33,34,54
35,36,55
22
21
DETAIL B
6
6
CONTROL BOX
5
6
2
8
7
SEE DETAIL B
22
21
23
56
22
24
2.00 REF.
UNIT BODY
A
4
10
DOOR ASSEMBLY
44
42
46
47
43
33,34,54
45
1
3
FACE PANEL
30
31
DETAIL A
REF. 60356F

FIGURE 6c - UNIT COMPONENTS (Model 4241)

Unit Components (4241) - Refer to Figure 6c

ITEM	PART NO.	DESCRIPTION
1	69044	Bracket, Door Hinge Mounting
2	69133	Plate, Door Hinge Mounting Bracket
3	69047	Pin, Door Hinge
4	69083	Decal, Castle EO Gas Aerator
5	518581	Decal, Identification (4241)
6	E2169	Screw, #6-32 x 3/8 Self-Tapping Phillips Pan Head
7	E4636	Screw, #10-32 x 1/2 Phillips Flat Head
8	59977	Washer, #10 Nylon Trim
10	513603	Decal, MDT
21	69866	Plate, Magnetic Catch Strike
22	69867	Plate, Strike Plate Mounting
23	E6850	Screw, #6-32 x 1 Phillips Flat Head
24	E0074	Screw, #6-32 x 3/8 Phillips Truss Head
25	69242	Insulation, Top Front
26	69243	Insulation, Side (20-1/2 x 69-7/8)
27	69244	Insulation, Plenum (26 x 69)
28	69247	Insulation, Top Rear
30	E5186	Nut, 1/4-20 Hex
31	69171	Stud, Panel Mounting, 1/4-20 x 3/4 long
32	–	Adhesive, Insulation
33	69445	Shim, Door Hinge (1/16 thick)
34	60596	Shim, Door Hinge (7/64 thick)
35	60640	Shim, Door Strike Plate (7/64 thick)
36	60641	Shim, Door Strike Plate (1/16 thick)
42	69450	Bracket, Hinge Support
43	E0149	Nut, #10-32 Hex
44	E6898	Screw, #10-32 x 1/2 Phillips Truss Head
45	E4699	Screw, #10-32 x 3/4 Hex Head
46	E6563	Washer, #10 Flat
47	E7034	Washer, #10 Helical Spring Lock
54	60672	Shim, Door Hinge (23/64 thick)
55	60671	Shim, Door Strike Plate (23/64 thick)
56	350171	Label, EO Gas Warning

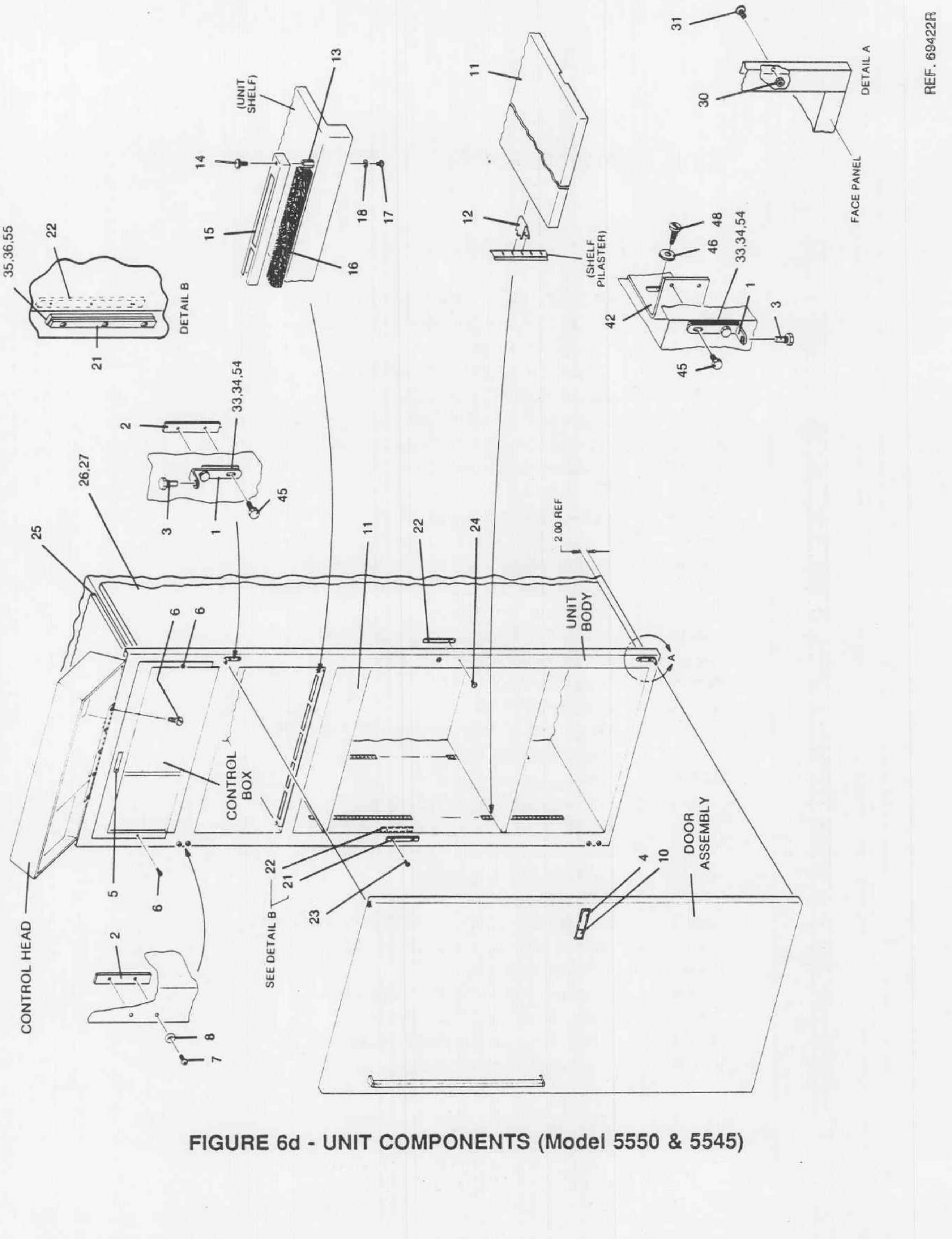

CONTROL HEAD
2
5
6
8
7
SEE DETAIL B
22
21
23
CONTROL BOX
6
6
25
26,27
3
1
2
33,34,54
45
11
22
24
2.00 REF
UNIT BODY
A
DOOR ASSEMBLY
4
10
21
DETAIL B
35,36,55
22
15
14
16
18
17
13
(UNIT SHELF)
11
12
(SHELF PILASTER)
42
45
3
1
33,34,54
46
48
30
31
FACE PANEL
DETAIL A
REF. 69422R

FIGURE 6d - UNIT COMPONENTS (Model 5550 & 5545)

Unit Components (5550 & 5545) - Refer to Figure 6d

ITEM	PART NO.	DESCRIPTION
1	69044	Bracket, Door Hinge Mounting
2	69133	Plate, Door Hinge Mounting Bracket
3	69047	Pin, Door Hinge
4	69084	Decal, Castle Warming Cabinet
5	518577	Decal, Identification (5550)
	518582	Decal, Identification (5545)
6	E2169	Screw, #6-32 x 3/8 Self-Tapping Phillips Pan Head
7	E4636	Screw, #10-32 x 1/2 Phillips Flat Head
8	59977	Washer, #10 Nylon Trim
10	513603	Decal, MDT
11	69193	Shelf, Adjustable
12	69167	Bracket, Shelf Pilaster Clip
13	86532	Standoff, #8-32 Internal Thread x 1/2 long
14	69164	Screw, #8-32 x 5/8 Thumbscrew
15	69165	Cover, Shelf Air Filter (5550)
16	69195	Filter, Shelf Air (5550)
17	E5019	Screw, #8-32 x 3/16 Phillips Pan Head
18	E6389	Washer, #8 Internal Tooth Lock
21	69866	Plate, Magnetic Catch Strike
22	69867	Plate, Strike Plate Mounting
23	E6850	Screw, #6-32 x 1 Phillips Flat Head
24	E0074	Screw, #6-32 x 3/8 Phillips Truss Head
25	69242	Insulation, Top Front
26	69243	Insulation, Side (20-1/2 x 69-7/8)
27	69244	Insulation, Plenum (26 x 69)
30	E5186	Nut, 1/4-20 Hex
31	69171	Stud, Panel Mounting, 1/4-20 x 3/4 long
32	—	Adhesive, Insulation
33	69445	Shim, Door Hinge (1/16 thick)
34	60596	Shim, Door Hinge (7/64 thick)
35	60640	Shim, Door Strike Plate (7/64 thick)
36	60641	Shim, Door Strike Plate (1/16 thick)
42	69450	Bracket, Hinge Support
45	E4699	Screw, #10-32 x 3/4 Hex Head
46	E6563	Washer, #10 Flat
48	E7021	Screw, #10-32 x 1/2 Self-Tapping Pan Head
54	60672	Shim, Door Hinge (23/64 thick)
55	60671	Shim, Door Strike Plate (23/64 thick)

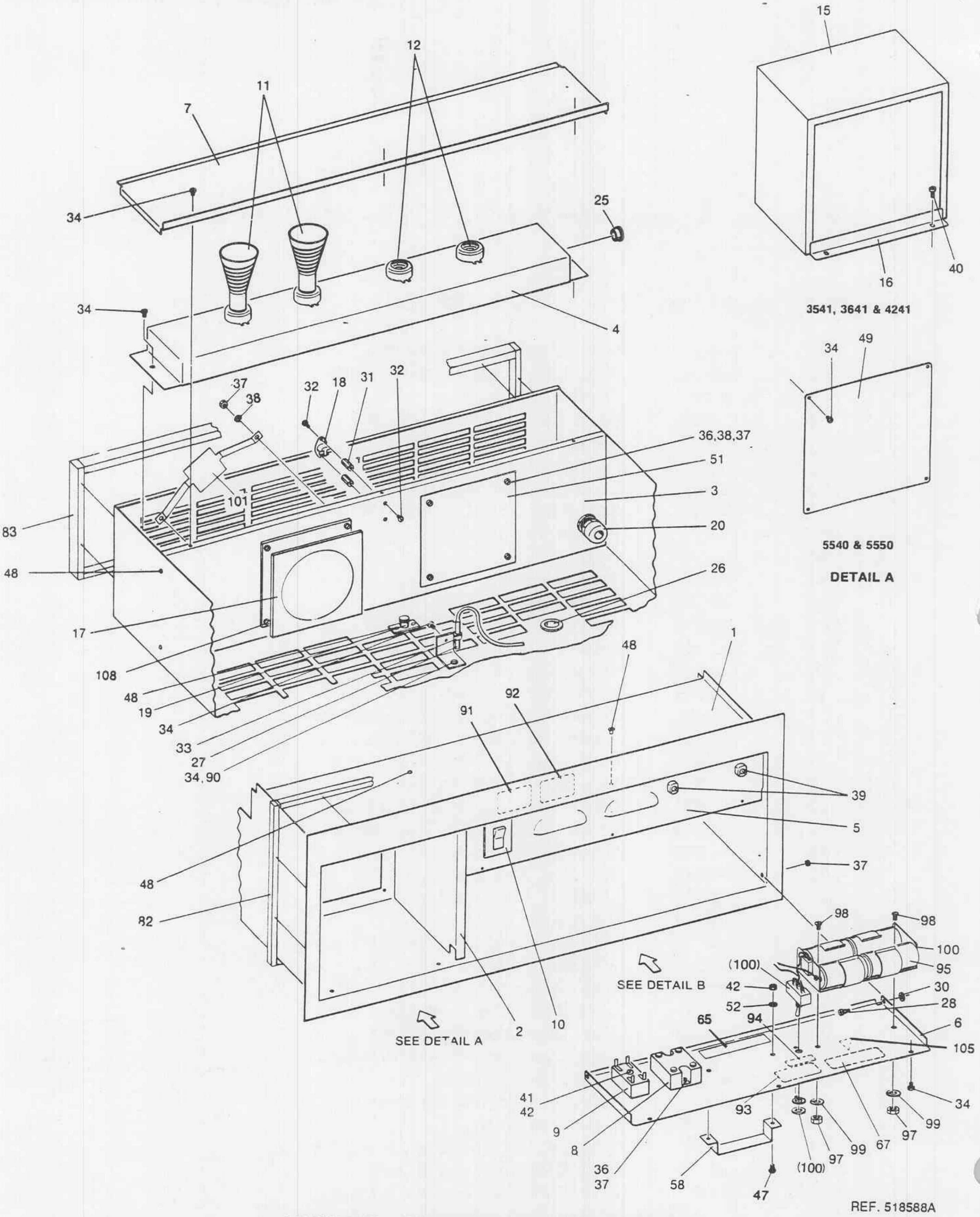
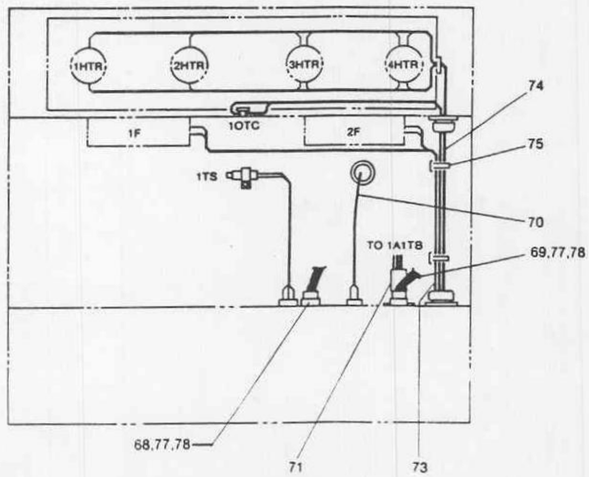
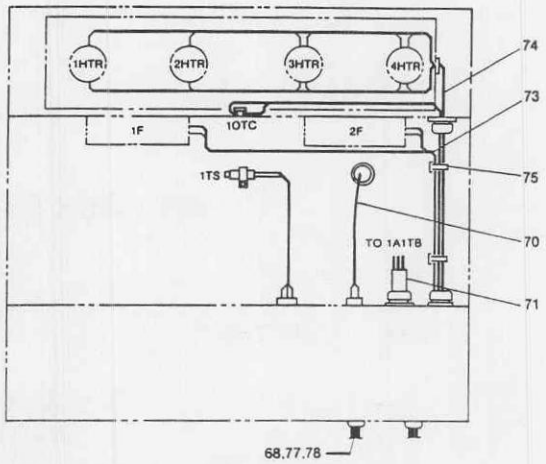

15
12
11
7
34
25
16
40
3541, 3641 & 4241
34
4
34
49
37
38
32
18
31
32
36,38,37
51
3
101
83
20
48
5540 & 5550
DETAIL A
26
17
1
108
48
48
19
92
91
34
33
27
34,90
39
5
48
37
82
98
98
100
(100)
95
SEE DETAIL B
42
30
52
28
65
94
6
2
10
105
SEE DETAIL A
41
42
34
93
9
99
97
99
67
8
97
(100)
36
37
58
47
REF. 518588A

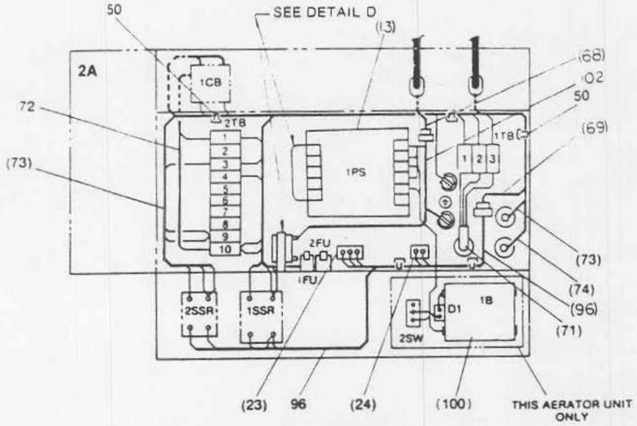
FIGURE 7 - CONTROL BOX COMPONENTS


1HTR
2HTR
3HTR
4HTR
74
1F
1OTC
2F
75
1TS
70
TO 1A1TB
69,77,78
68,77,78
71
73

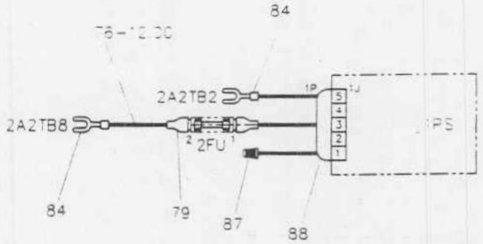
VIEW: TOP OF CONTROL BOX
(FOR REMOTE MTD CONTROLS ONLY)

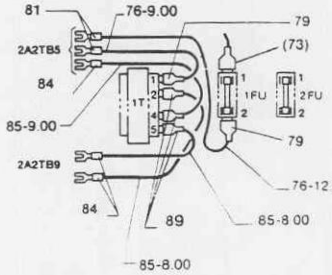

1HTR
2HTR
3HTR
4HTR
74
73
1F
1OTC
2F
1TS
75
70
TO 1A1TB
71
68,77,78

VIEW: TOP OF CONTROL BOX
(NOT FOR REMOTE MTD CONTROLS)

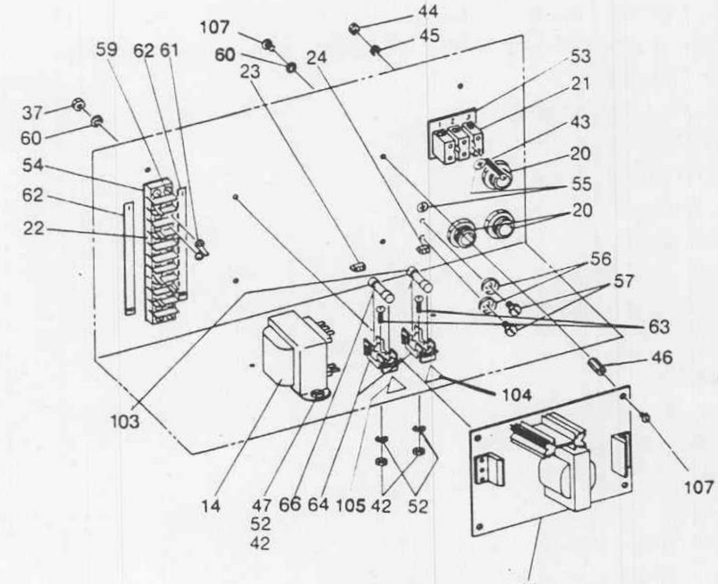

50
SEE DETAIL D
(13)
2A
1CB
(68)
102
50
(69)
72
2TB
1TB
(73)
1PS
2FU
1FU
(73)
(74)
(96)
(71)
2SSR
1SSR
D1
1B
2SW
(23)
96
(24)
(100)
THIS AERATOR UNIT ONLY

VIEW SHOWING HARNESS ROUTINGS
IN CONTROL BOX

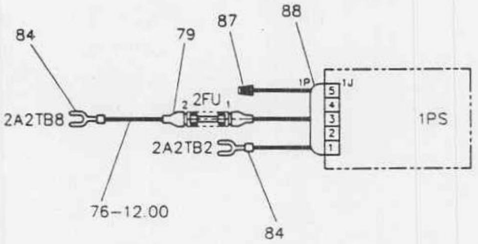

84
76-12.00
2A2TB2
1P
1J
2A2TB8
2 2FU 1
1PS
84
79
87
88


81
76-9.00
79
(73)
2A2TB5
84
1T
1FU
2FU
85-9.00
79
2A2TB9
76-12.00
84
89
85-8.00
85-8.00

DETAIL D
CONNECT FOR 120 VAC


107
44
45
59
62
61
60
23
24
53
21
37
60
43
54
20
55
62
20
22
56
57
63
46
104
103
107
14
47
52
42
66
64
105
42
52
13

DETAIL B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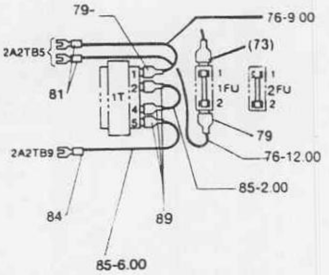
79
87
88
1P
1J
2A2TB8
2 2FU 1
1PS
2A2TB2
76-12.00
84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76-9.00
(73)
2A2TB5
81
1T
1FU
2FU
79
2A2TB9
76-12.00
85-2.00
84
89
85-6.00

DETAIL D
CONNECT FOR 240 VAC

REF. 518588A

FIGURE 7 - CONTROL BOX COMPONENTS

Control Box Components - Refer to Figure 7

ITEM	PART NO.	DESCRIPTION
1	518599	Box, Control
2	69071	Panel, Divider
3	69069	Panel, Fan Mounting
4	69068	Panel, Heater Mounting
5	69073	Panel, Circuit Breaker Mounting
6	69072	Door, Control Box
7	69070	Cover, Heater
8	518404	Relay, Solid State (45 Amp)
9	69089	Relay, Solid State (2-1/2 Amp)
10	69110	Circuit Breaker, 10 Amp
	69109	Circuit Breaker, 20 Amp
11	69093	Heater, 120V, 500W
	69407	Heater, 230V, 500W
12	61051	Receptacle, Heater
13	513013	Board, Power Supply P.C.
14	69090	Transformer, 115-230V Primary/24V Secondary
15	69112	Filter, Absolute Air (3541, 3641 & 4241)
16	69087	Bracket, Air Filter Retaining (3541, 3641 & 4241)
17	69094	Fan, 120V, 50-60 Hz, 127 CMF
	69095	Fan, 230V, 50-60 Hz, 127 CMF
18	69106	Thermostat, 180 degrees F (3541)
	69836	Thermostat, 200 degrees F (3641 & 4241)
	69107	Thermostat, 212 degrees F (5540, 5545 & 5550)
19	69173	Stop, Control Box Mounting
20	69003	Connector, 13/16 dia Liquid Tight
21	86591	Strip, Terminal (3 Connector)
22	49893	Block, Terminal (10 Connector)
23	44831	Receptacle, 3 Connector
24	69092	Receptacle, 2 Connector
25	40730	Bushing, Snap, 1/2 ID x 23/32 OD for 5/8 dia Hole
26	69091	Bushing, Snap, 3/4 ID x 1-1/8 OD for 1 dia Hole
27	518407	Probe, Temperature
28	69100	Screw, #8-32 Shoulder
30	69102	Washer, 3/16 ID x 7/16 OD x 1/16 thick Flat
31	86757	Standoff, #4-40 Internal Thread x 3/4 long
32	E6610	Screw, #4-40 x 5/16 Phillips Pan Head
33	518495	Clamp, 1/4 dia Cable
34	E5729	Screw, #6-32 x 1/4 Self-Tapping Pan Head
36	E6835	Screw, #8-32 x 1/2 Phillips Pan Head
37	E0253	Nut, #8-32 Hex

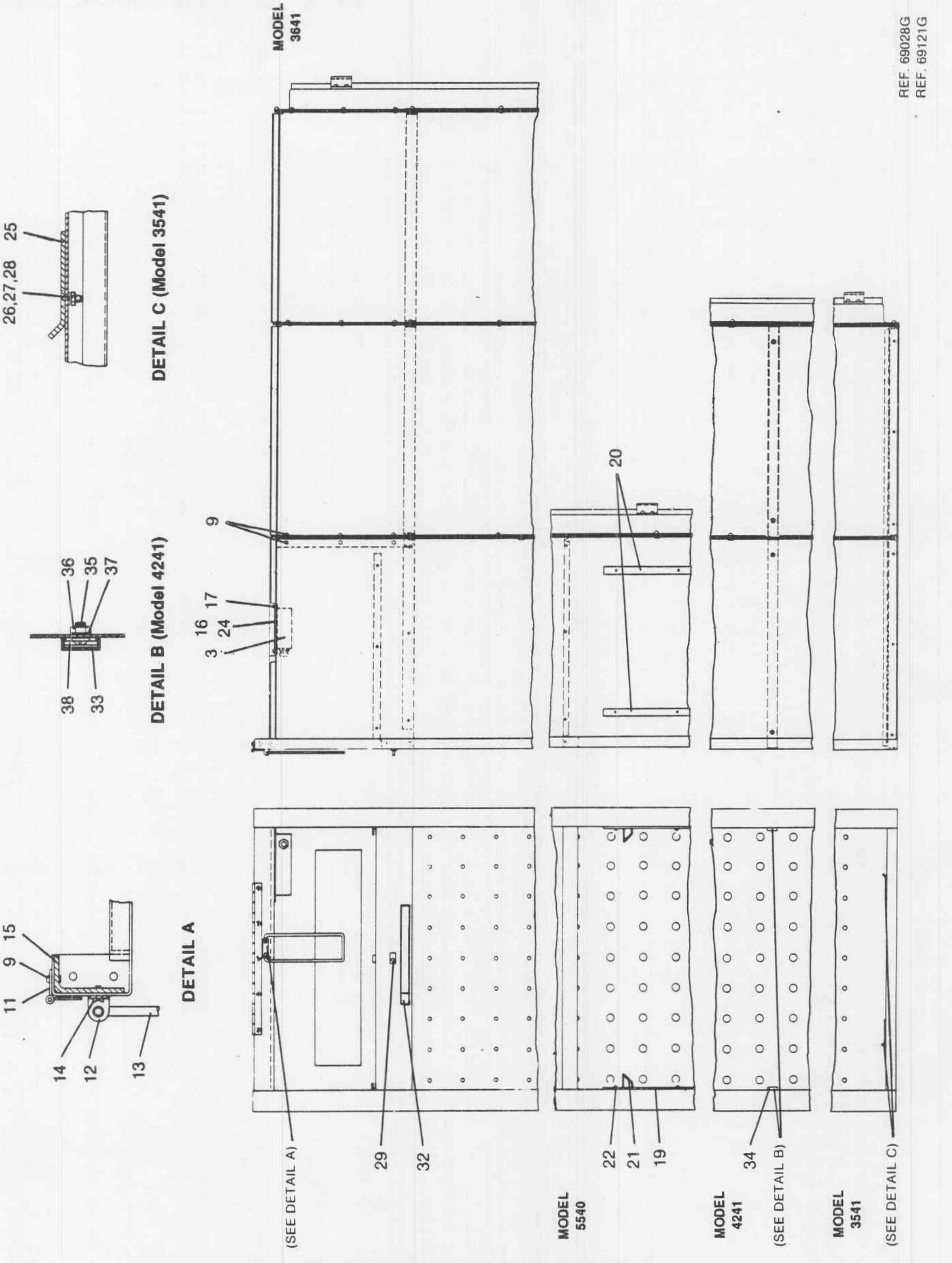
Control Box Components - Refer to Figure 7

ITEM	PART NO.	DESCRIPTION
38	E2041	Washer, #8 Internal Tooth Lock
39	57030	Strain Relief, 21/64 - 23/64 dia
41	E4809	Screw, #6-32 x 1-1/4 Phillips Pan Head
42	E7139	Nut, #6-32 Hex(Brass)
43	E5337	Screw, #4-40 x 1-1/4 Phillips Pan Head
44	E7028	Nut, #4-40 Hex
45	E2053	Washer, #4 Internal Tooth Lock
46	518493	Standoff, #8-32 Internal Thread x 1/2 long
47	E5010	Screw, #6-32 x 1/4 Phillips Pan Head
48	E7048	Rivet, 1/8 dia x 3/8 long Domed Pop
49	69113	Cover, Air Filter Opening (5540, 5545 & 5550)
50	69123	Tie, 2 max dia Cable
51	69198	Cover, Fan Opening (3541)
52	E2043	Washer, #6 Internal Tooth Lock
53	69410	Insulation, Card (3 Connector)
54	49894	Insulation, Terminal Block
55	65723	Label, Ground Identification (Protective Earth)
56	61419	Washer, #10 Terminal Cup
57	E6645	Screw, #10-32 x 3/8 Hex Head Ground
58	86947	Bracket, Control Head Latch
59	E0252	Screw, #8-32 x 5/8 Phillips Pan Head
60	E2041	Washer, #8 Internal Tooth Lock
61	52001	Jumper, Terminal Block
62	51255	Strip, Terminal Block Marker
63	E5015	Screw, #6-32 x 1/2 Phillips Pan Head
64	69426	Block, Fuse Mounting (Single)
65	58579	Label, Fuse Warning
66	69425	Fuse, 1/4 Amp (120V Units)
	69424	Fuse, 1/8 Amp (230V Units)
67	61453	Label, Circuit Caution
68	530477	Harness, 3A1P to 2A1P (Unit Mounted Control Head)
	530476	Harness, 3A1P to 2A1P (Remote Mounted Control Head)
69	530478	Harness, 3A5/6P to 2A8P (Unit Mounted Control Head)
	530475	Harness, 3A5/6P to 2A8P (Remote Mounted Control Head)
70	530479	Harness, 2A4P to 1SW Door
71	69405	Harness, 1A1TB to 2A1TB
72	69406	Harness, 2A Control Box
73	69408	Harness, 2A to 1Fan & 2Fan
74	69409	Harness, 2A to Heater & Thermostat

Control Box Components - Refer to Figure 7

ITEM	PART NO.	DESCRIPTION
75	45943	Tie, Cable
76	R3397	Wire, #18 AWG Stranded, White (specify length)
77	87797	Terminal, 8 Connector
78	530472	Terminal Assembly, 10 Connector
79	52272	Terminal, Female Slip-On (#22 - #18 Wire)
81	B2115	Terminal, Fork Spade (#22 - #16 Wire)
82	R3422	Strip, Rubber, 1/8 x 1/2 (specify length)
83	R3423	Strip, Rubber, 3/8 x 1/2 (specify length)
84	B2115	Terminal, Fork Spade (#22 - #16 Wire)
85	R3397	Wire, #18 AWG Stranded, White (specify length)
87	B0105	Nut, Wire (Two #18 min - Two #16 max)
88	530474	Harness, 2A1FS to 2A2TB
89	52272	Terminal, Female Slip-On (#22 - #18 Wire)
90	69455	Bracket, Temperature Probe Mounting
91	–	Label, ETL
92	–	Decal, CSA
93	–	Plate, Rating
94	60669	Decal, Battery Back-Up On
95	60670	Battery, 1-1/2V D Cell
96	530480	Harness, 2AJ8 to 2A Control Box
97	E7044	Nut, #6-32 Hex
98	E5010	Screw, #6-32 x 1/4 Phillips Pan Head
99	E2043	Washer, #6 Internal Tooth Lock
100	530473	Back-Up Battery System
101	56181	Shield, Fan Heat
102	530481	Harness, 2AJ1 to 2A Control Box
103	72441	Fuse, 3 Amp
104	518539	Label, 3 Amp Fuse
105	530493	Label, 1/4 Amp Fuse
106	517067	Label, Electric Shock Warning
107	E5025	Screw, #8-32 x 5/16 Phillips Pan Head
108	E0252	Screw, #8-32 x 5/8 Phillips Pan Head

NOTES


MODEL 3641
REF. 69028G
REF. 69121G
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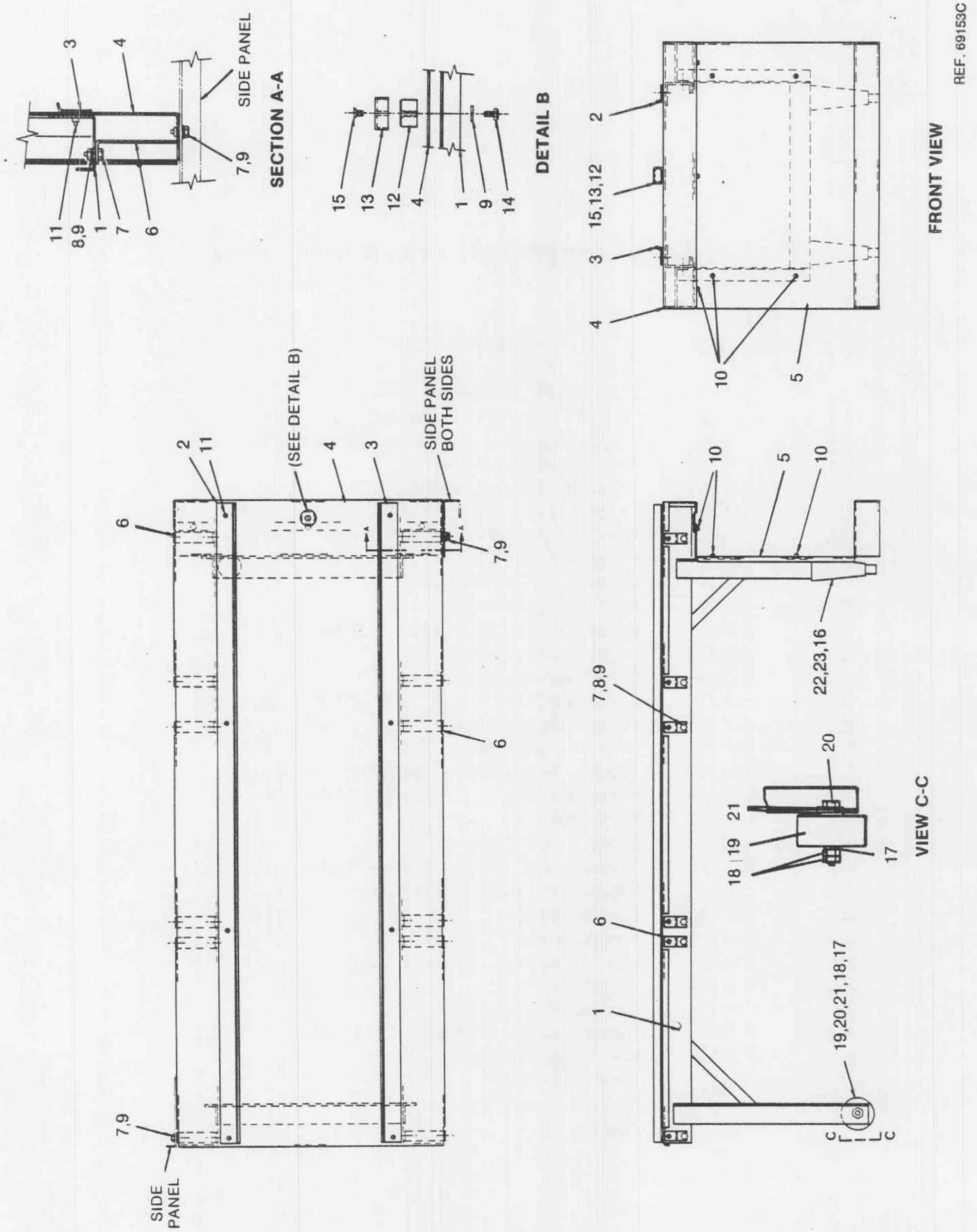
25
DETAIL C (Model 3541)
36
35
37
38
33
DETAIL B (Model 4241)
9
17
16
24
3
20
15
9
11
14
12
13
DETAIL A
(SEE DETAIL A)
29
32
22
21
19
34
(SEE DETAIL B)
(SEE DETAIL C)
MODEL 5540
MODEL 4241
MODEL 3541

FIGURE 8 - BODY COMPONENTS

Body Components - Refer to Figure 8

ITEM	PART NO.	DESCRIPTION
3	–	Junction Box Assembly
–	86591	• Strip, Terminal (3 Connector)
–	E6900	• Screw, #4-40 x 3/4 Phillips Pan Head
–	69003	• Connector, 13/16 dia
–	518556	• Insulation, Terminal Block
–	65723	• Label, Ground Identification (Protective Earth)
9	E7052	Rivet, 1/8 dia x 3/8 long Domed Pop
11	86487	Hinge, Control Head
12	86648	Bracket, Lift Rod Support
13	86512	Rod, Control Head Lift
14	E5027	Screw, #8-32 x 3/8 Phillips Pan Head
15	69027	Angle, Hinge Support
16	69166	Cover, Service Access
17	E2194	Screw, #6-32 x 1/4 Self-Tapping Phillips Pan Head
19	69168	Pilaster, Shelf (5540)
20	69017	Strip, Pilaster Support (5540)
21	69167	Bracket, Shelf Pilaster Clip (5540)
22	E5015	Screw, #6-32 x 1/2 Phillips Pan Head
24	–	Plate, Rating
25	69118	Guide, Track (3541)
26	E4636	Screw, #10-32 x 1/2 Phillips Flat Head
27	E5238	Washer, #10 Helical Spring Lock
28	E0149	Nut, #10-32 Hex
29	69249	Switch, Door (SPST)
32	69446	Label, Warning (EO Gas Aerator)
33	69416	Trimstrip (4241)
34	69417	Trimcap, Plastic (4241)
35	E4816	Screw, 1/4-20 x 3/8 Phillips Pan Head
36	E2062	Nut, 1/4-20 Hex (Brass)
37	43123	Washer, 1/4 Flat
38	69427	Retainer, Trimstrip (4241)
–	72137	Sealant, RTV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8,9
1
7
6
3
4
7,9
SIDE PANEL
SECTION A-A
15
13
12
4
1
9
14
DETAIL B
4
3
15,13,12
2
10
5
FRONT VIEW
REF. 69153C
6
2
11
(SEE DETAIL B)
4
3
SIDE PANEL BOTH SIDES
A
A
7,9
6
7,9
SIDE PANEL
10
5
10
22,23,16
7,8,9
6
1
19,20,21,18,17
C
C
20
21
19
18
17
VIEW C-C

FIGURE 9 - FRAME & TRACK COMPONENTS (Model 3641)

Frame & Track Components (3641) - 69153 - Refer to Figure 9

ITEM	PART NO.	DESCRIPTION
1	69146	Frame, Chamber Floor
2	69149	Track, Cart (R.H.)
3	69150	Track, Cart (L.H.)
4	69151	Panel, Track Cover
5	69152	Panel, Lower Frame Cover
6	69135	Spacer, Frame
7	E0108	Screw, 1/4-20 x 5/8 Hex Head
8	E5186	Nut, 1/4-20 Hex
9	E5413	Washer, 1/4 Helical Spring Lock
10	E2194	Screw, #6-32 x 1/4 Self-Tapping Phillips Pan Head
11	E4925	Screw, #10-32 x 3/8 Phillips Flat Head
12	34977	Stud, Carriage Latch
13	34978	Cap, Carriage Latch Stud
14	E2128	Screw, 1/4-20 x 3/8 Hex Socket Head
15	E4730	Screw, 1/4-20 x 1/2 Phillips Flat Head
16	69130	Leg, Adjustable
17	E2240	Washer, 1/2 Helical Spring Lock
18	E2241	Nut, 1/2-13 Hex
19	69136	Wheel, 3-1/4 dia x 1-1/2 wide
20	E6539	Screw, 1/2-13 x 3 Hex Head
21	E2254	Washer, 1/2 Flat
22	E4646	Nut, 5/8-11 Hex Jam
23	E6193	Washer, 3/4 Internal Tooth Lock

Stand Package (3541) - 69214 - [Not Illustrated]

ITEM	PART NO.	DESCRIPTION
1	69206	Shelf, Stand
2	69203	Leg Assembly
—	69204	• Glide, Leveling
3	69202	Tube, Front & Rear
4	69201	Tube, Side
5	03370	Button, Plug for 9/16 dia Hole
6	E2128	Screw, 1/4-20 x 3/8 Hex Socket Head
7	69447	Gusset, Stand
8	E2045	Washer, 1/4 Internal Tooth Lock
9	E6898	Screw, #10-32 x 1/2 Phillips Truss Head
10	E2044	Washer, #10 Internal Tooth Lock

Recommended Spare Parts List

It is recommended that the parts listed below be maintained in stock to ensure parts are immediately available when needed.

QTY	PART NO.	DESCRIPTION
		ELECTRICAL PARTS
*6	69425	Fuse, 1/4 Amp (120V Units)
*6	69424	Fuse, 1/8 Amp (230V Units)
*6	69093	Heater, 120V, 500W
*6	69407	Heater, 230V, 500W
2	72441	Fuse, 3 Amp
1	513855	Display P.C. Board
1	518407	Probe, Temperature
1	69089	Relay, 2-1/2 Amp
1	518404	Relay, 45 Amp
*1	69106	Thermostat, 180 degree (3541)
*1	69836	Thermostat, 200 degree (3641 & 4241)
*1	69107	Thermostat, 212 degree (5540, 5545 & 5550)
1	69249	Switch, Door
		GENERAL PARTS
2	69240	Air Filter, First Stage (Control Head)
2	69112	Air Filter, Absolute (Control Box)
2	69195	Air Filter, Shelf
2	530482	Recorder Chart, 24 Hour (Box of 100)
1	69429	Ink Cartridge, Red (Box of 6)

* Alternates - select part number that applies.

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